

September, 1994

QUESTIONNAIRE AND THE ANSWERS  
ON  
THE PRELIMINARY SURVEY  
OF  
THE IRRIGATION SYSTEM READJUSTMENT PROJECT IN ROMANIA

To conduct our survey efficiently, we prepared questionnaire. We would like to ask you to answer the questions in English. Please note the followings when you answer.

- (1) There are example answers following the abbreviation, "ex.a" for complicated questions. These are just examples to ease your understanding. Please, thus, answer the questions from your own viewpoints.
- (2) If it is difficult for you to answer some questions, please skip them.

1. AGRICULTURAL POLICY ASPECTS

Food Production Systems Aimed at the Government

Q-1-1: We heard that there are three types of farm management, such as private farm (small), association farm (medium) and commercial farm (large). Which type will you press ahead with a government program to prepare the food production system for the future?

Answer by ISPIF

There are seven types of farm management, and the covering area is too changing to know the area.

- (1) The state controlled commercial companies having private share holders
- (2) The agricultural research institute
- (3) Government farms
- (4) Individual farms
- (5) Informal association
- (6) Formal association
- (7) Private commercial companies

Cited from ROMANIAN AGRICULTURE OPPORTUNITY 1993

"Encourage concentration of the present small holdings into viable medium-sized holdings by stimulating and expanding the land market, and by promoting the creation of family associations, cooperatives, a.s.o." (p.12)

Answer by MAP

There are four types.

- (1) Individual farm - The average scale is 1 to 10 ha.
- (2) Association farm - The average scale is 80 to 100 ha.
- (3) Agricultural Limited Company - The average scale is about 200 ha.
- (4) Commercial Agricultural Company - The average scale is more than 400 ha.

There is no government recommendations and encouragement to collect small farms to make the larger scale management. We follow the natural procedures.

Q-1-2: Please let us know your short term program and long term program for the system answered above.

Answer by MAF

No program.

Q-1-3: Please show the average farm management scale of the three types of farms.

Answer by ISPIF

- (1) Individual farms  $\leq$  10 ha
- (2) Informal association < 20 to 300 ha
- (3) Formal association < 2500 ha (average 1000ha)
- (4) Private commercial companies > 2500 ha

Answer by MAF

It was verbally answered.

Q-1-4: On the progress of farm privatization in 1994, are there any changes since 1993?

Answer by MAF

See the answer of Q-1-1.

Q-1-5: We heard that the land privatization process is as follows. At first, "Certificate" is given after confirmation of previous land ownership with cadaster or witness. Secondary, "Title of Property" is given after definition of land location and area with agreement of all the related persons. Giving the title is done village by village after having the agreement of the whole village people. Is this correct?

Answer by LRD

Yes

Q-1-6: Is it correct that farmers cannot sell or lease the land without the title?

Answer by LRD

Yes

Answer by MAF

Yes. To release the influence, we have provided Integrators system after 1990. The integrators borrows the amount of money from the bank, divide it and lend to individual farmer or association. The farmer or association give some of the products instead of money to payback. The integrators sell the products and return the money to the bank. The integrators are Companies, etc.

Q-1-7: Is it correct that the maximum land ownership of one farmer is 10 hectares?

Answer by LRD

Yes.

Q-1-8: Please show the progress of giving the certificate and title of property with percentage and hectareage.

Answer by MAF

The latest data on September 12, 1994 shows the following progress.

Certificate - 99% of the target people which cover  
Title - 28.8% of the target people (the total is 4,373,209).

Q-1-9: On your measure to the non-residential land owner or non-cultivated land, is it available for a farmer to sell or buy the agricultural land individually?

Answer by MAF

It is not going well for the two reasons.

- (1) Giving titles has not ended.
- (2) Two regulations are required for the followings, but not yet provided.
  - Regulations on cadaster
  - Establishment of the agency of rural development to intermediate selling land

Q-1-10: Do you have any programs for the production increase of recommended crops or food production in response to the farm privatization?

Answer by MAF

It was verbally answered.

Q-1-11: Do you have any programs for marketing system in response to the new food production systems?

Answer by MAF

It was verbally answered.

Q-1-12: Please let us know your latest statistics for crop planted area.

Answer by MAF

The data on 1994 are as follows.

Wet and dry barley - 2.4 million ha (2.5 tons/ha)  
Barley - 550,000 ha (3.0 tons/ha)  
Other crops: Maize and sorgam - 3 million ha (3.0 tons/ha)  
Sunflower - 580,000 ha (1.5 tons/ha)  
Soybeans - 65,000 ha (1.5 tons/ha)

#### Agricultural Assistance for Farmers

Q-1-13: Please describe the taxation system to the farmer after January 1, 1994.

Answer by MAF

It was verbally answered.

Q-1-14: As for the funding, please let us know its variety, the rate of interest, loaning condition and progress, and the annual budget of the government.

Answer by MAF

It was verbally answered.

Q-1-15: As for the subsidy, please let us know its variety, subsidizing condition and progress, and the annual budget of the government.

Answer by MAF

It was verbally answered.

Q-1-16: Where and how is a farmer loaned or subsidized from the government?

Answer by MAF

It was verbally answered.

Q-1-17: Do you have any measures or programs to enhance the crop production level of the private farmer?

Answer by MAF

It was verbally answered.

Q-1-18: Are there any network or support system for private farmer in fund and technic?

Answer by MAF

It was verbally answered.

#### Organizing

Q-1-19: What is the present progress of organizing farmers?

Answer by MAF

It was verbally answered.

Q-1-20: What is present feature of the farmers' association? Is it a functional association or just a community of general agricultural affairs?

Answer by MAF

It was verbally answered.

Q-1-21: How managed is the association?

Answer by MAF

It was verbally answered.

## 2. TECHNICAL ASPECTS

### 2-0. General

Q-2-0-1: How large scale of geographical maps are available, and which organization is responsible for preparing these maps?

#### Answer by ISPIF

Maps are prepared and available from Department of Topographical study under Ministry of National Protection. The 1/25000 scale maps are available covering the whole country. The 1/50000 and 1/100000 scale maps are also available. All maps are kept in ISPIF.

Q-2-0-2: Geological maps and maps showing irrigation area of each water resource are required to formulate agricultural development programs in Japan. Are these maps available? Which organization is responsible for preparing them?

#### Answer by ISPIF

These maps for existing irrigation schemes are available, and the scales are 1/10000 and 1/5000. The maps are prepared by ISPIF.

IGFCOT which is the institute for geology, photogrametry and land cartography is preparing the similar maps but ISPIF's are more details.

Q-2-0-3: Please describe project implementation procedures.

#### Answer by ISPIF

To formulate agricultural production plan, the research divisions of Ministry of Agriculture and Food conduct agronomic experimental activities or plant growth research data collection. Based on the data, the committee including the members assigned from all the related departments formulates the production programs. The DLR conducts reconnaissance to find project sites for their civil works. To formulate civil works and practice construction works, all the activities are executed by the LRD. The ISPIF makes programs and design works of all irrigation projects. Construction works are also carried out by ISPIF. After completion of civil works, the SCALIF take over the facilities and conduct operation and maintenance works.

### 2-1. Irrigation Facilities

#### Water Resources Development

Q-2-1-1: How amount is the maximum of water resources in Romania?

The average water stock in Romania is 40 billion cubic m for the domestic rivers, 170 billion cubic m for the Danube and 9 billion cubic for underground water. Of these amounts, only a supply of about 5,000 ton/ha could be reliable in the irrigation systems; we also take into account the Danube with 10 billions cubic m/year and underground waters and domestic rivers with 5 billion cubic m/year."

For more detailed, Ministry of Water, Forestry and Environmental Protection (hereinafter called "Ministry of Water") will give the whole needs of water resources.

Q-2-1-2: When you calculate the maximum amount of water resources, how do you calculate it?

Answer by ISPIF

We calculate it using the data taken from the hydrological stations which are placed on the rivers and collecting the data on flow speed, cross section, discharge, etc., for different probability. This is under Ministry of Water, but at the same done by ISPIF when necessity arise.

Q-2-1-3: Do you have any condition of water resources shortage?

Answer by ISPIF

They depend on the availability of the discharge, because we compare the needs with the available discharge.

Q-2-1-4: When you develop the water resources, how do you adjust in irrigation water, water supply and industrial water?

Answer by ISPIF

This is coordinated by the Ministry of Water by presenting the whole needs and justification to the Ministry of Water. The Ministry will decide it finally about priority.

Q-2-1-5: How is the condition of irrigation water quality? (Influence of chemicals, eutrophication, etc.)

Answer by ISPIF

Some rivers face the problem on sodium and eutrophication. But Danube in general not affected by such kind of problems.

#### Irrigation Program

Q-2-1-6: How is the share (demarcation) of Ministry of Agriculture and Food and Ministry of Waters, Forestry and Environment Protection on irrigation program?

Answer by ISPIF

Whole the procedures are done by Ministry of Agriculture and Food, LRD. Then MAF sends it to the Ministry of Water. After approval from the Ministry, the next procedure such as financing is started.

#### Water Right

Q-2-1-7: How does the water right be adjusted on using the water resources from the international river?

Answer by ISPIF

We have only Danube, Prut and some rivers from Romania to Hungary for former

Yugoslavia. The water right is coordinated by the Hydrotechnical Commission of two each countries under the Ministry of Water.

Water Construction (water application facilities)

Q-2-1-8: If you have any troubles on water construction and maintenance, what is the cause of troubles? (Troubles on criteria, construction, materials' production, maintenance(ex. electric cost), hydraulics, etc.)

Answer by ISPIF

Yes we have troubles especially for electrical costs for pumping stations. Other troubles are erosion of the slope of the bed trailing, especially for the Danube. Erosions come from the modification of the main route of the Danube water.

Rehabilitation of water construction

Q-2-1-9: May you show the outline of investigation results of the condition about old water construction (exhausted conditions of the water application facilities) ?

Answer by ISPIF

We have studied Danube. We can show you the pictures as your requests.

Q-2-1-10: Please show us the list of water construction (water application facilities).

Answer by ISPIF

We have it for each irrigation and drainage system. Each report has heavy volume. We can show you as your request.

Water resources

Q-2-1-11: Is there "National Water Resources Plan"? If possible, would you please show us its contents.

Answer by ISPIF

Yes. But it is in the hand of Ministry of water.

Q-2-1-12: Are there "Regional Water Resources Plans" related to the existing projects? If possible, would you please show us one of their contents.

Answer by ISPIF

Yes. There is regional water resources plan for each main hydrographical basin. These regional water resources plan are also handed by the Ministry of Water.

Q-2-1-13: If there is Water Quality Standard for irrigation water, please list up items and standard numbers

Answer by ISPIF

(The answer will be given on September 23, 1994.)

Q-2-1-14: If there are measurements of quality of irrigation water related to the existing projects, please list up them.

(This question was canceled.)



## 2-2. Technical Information System

Q-2-2-1: What is the existing information system in the following organizations?

- (1) Ministry of Agriculture and Food (MAF)
- (2) Research Institute of Irrigation, Drainage and Reclamation (ICITID)
- (3) Institute of Studies and Design of Land Reclamation Project (ISPIF)

(The question for MAF was canceled.)

### Answer by ICITID

We have written reports for MAF and others, which include Scientific reports. The Ministry delivers the reports. Academy for Agricultural Science delivers the reports periodically.

### Answer by ISPIF

In each year, we have printed special bulletin, which includes the studies and analysis and research required for rehabilitation, modernization, completion and development of land reclamation projects. (Mr. Kanamori copied the English abstracts.)

We have a library, information from other Romanian institute and abroad are stocked these.

Information of cost estimation, management and another document are in the Library.

Q-2-2-2: What is the existing computer system in the following organizations?

- (1) Ministry of Agriculture and Food (MAF)
- (2) Research Institute of Irrigation, Drainage and Reclamation (ICITID)
- (3) Institute of Studies and Design of Land Reclamation Project (ISPIF)

Please answer about:

- (1) outline of computer system
- (2) number of staff (system engineer, operator, etc. (include academic background separately)
- (3) state of utilization
- (4) problems of utilization

(The question for MAF was canceled.)

### Answer by ICITID

- (1) There are total 4 personal computers, but most are old. One is Model-836.
- (2) We have only four operators, who are High School graduates with specialization course.
- (3) We use the computers for word processing, calculating and data base.
- (4) These are very old and have too small capacity.

### Answer by ISPIF

- (1) Later we will prepare the outline. We have computers at each division but they are not centralized.

- (2) Later
- (3) In this moment we just started computer systems. We need computer systems for data base, calculation, word processing.
- (4) Study and design meeting problems. For example, calculating river discharge, etc. Lack of hardware and software.

Q-2-2-3: What is the developing information service system in the following organizations?

- (1) Ministry of Agriculture and Food (MAF)
- (2) Research Institute of Irrigation, Drainage and Reclamation (ICITID)
- (3) Institute of Studies and Design of Land Reclamation Project (ISPIF)

(The question for MAF was canceled.)

Answer by ICITID

We want your advice because we don't know the latest system available. We want data base for crop water use, weather measurement, soil water, soil water parameters, water chemical parameters, characteristics for irrigation equipment, etc.

Answer by ISPIF

Our library is equipped with Journals and other publications. These are open and available for whole the specialist on land reclamation.

Q-2-2-4: What is the existing library in the following organizations?

- (1) Ministry of Agriculture and Food (MAF)
- (2) Research Institute of Irrigation, Drainage and Reclamation (ICITID)
- (3) Institute of Studies and Design of Land Reclamation Project (ISPIF)

Please answer about:

- (1) number of books (separate the special subject, total)
- (2) floor space
- (3) state of utilization
- (4) problems of utilization

(The question for MAF was canceled.)

Answer by ICITID

- (1) (It was verbally answered.)
- (2) About 40 sq.m
- (3) Books are about 40% frequently utilized.
- (4) Most of them are old.

Answer by ISPIF

- (1) (No answer was received during our stay.)
- (2) We have special office including two room, total 25 to 30 sq.m.
- (3) Very frequently utilized.
- (4) New information must be install in computers.

Q-2-2-5: How does the technical and research staff get the information in the following organizations?

- (1) Ministry of Agriculture and Food (MAF)
- (2) Research Institute of Irrigation, Drainage and Reclamation (ICITID)
- (3) Institute of Studies and Design of Land Reclamation Project (ISPIF)

Please answer about:

- (1) special subjects collected
- (2) problems of getting the information

(The question for MAF was canceled.)

Answer by ICITID

It is done by reading scientific papers from library, different library (ex. Academy of Agricultural Science), different symposium or international conferences, but small scale.

- (1) Various subject connected to our main activities.
- (2) Lack of funds to get information from abroad.

Answer by ISPIF

They are reading whole the new papers which are edited in our branch e.g. Academy of Agricultural Science, paper from international symposium, etc. Problems are lack of funds for receive the publications, pay the charge for participation of international conferences and symposium.

Q-2-2-6: How are the technical criteria developed in the following organizations?

- (1) Ministry of Agriculture and Food (MAF)
- (2) Institute of Studies and Design of Land Reclamation Project (ISPIF)

Please list up about

- (1) type : planning, design cost estimate, specification, construction, etc.
- (2) development year
- (3) development method (process)

(The question for MAF was canceled.)

Answer by ISPIF

We prepare a team including specialists from Academy, University and other similar organizations to us. The team members write the draft, which is approved by the staff of ISPIF and after from LRD, and edited and printed.

We are facing financial problems on the special machine for printing. The criteria are used by engineers, technician and farmers. But we don't have enough number of copies.

Lists are shown in the Annex-6.

Q-2-2-7: How is the data collected for the technical criteria in the following organizations?

- (1) Ministry of Agriculture and Food (MAF)
- (2) Institute of Studies and Design of Land Reclamation Project (ISPIF)

Please list up about the type of data (weather data, construction case study, etc.) and amount.

(The question for MAF was canceled.)

**Answer by ISPIF**

We are collecting the data from contractor organizations and SCELIF. The types of data are weather, construction case study, O & M and amount of costs.

Q-2-2-8: What is the information system needed after this (the required information system) in the following organizations?

- (1) Ministry of Agriculture and Food (MAF)
- (2) Research Institute of Irrigation, Drainage and Reclamation (ICITID)
- (3) Institute of Studies and Design of Land Reclamation Project (ISPIF)

(The question for MAF was canceled.)

**Answer by ICITID**

We need more specific explanation for correct answer.

**Answer by ISPIF**

We want to get information on Operation and Maintenance systems and from the experimental fields. We want the system to easily get these information which are owned by SCELIF and ICITID.

Q-2-2-9: What is the improvement points of the existing information system in the following organizations?

- (1) MAF
- (2) ICITID
- (3) ISPIF

(The question for MAF was canceled.)

**Answer by ICITID**

We need to collect the latest study papers from abroad promptly.

**Answer by ISPIF**

The improvement point is the good connection among telephone, radio and facilities for stocking the data base.

### 2-3. Water Management

Q-2-3-1: What is the present water management system from a diversion weir to farm gate?

Answer by LRD

Each year, SCELIF makes contract with farmers to supply water to their farm. The SCELIF proposes the delivery schedule. According to the contact and location of the farms within the scheme, SCELIF decides how to operate the scheme. The delivery schedule is related to the areas to be irrigated to cropping patterns, and availability of irrigation equipment, and related to natural conditions and others. The actual water delivery schedules are discussed during weekly meeting with farmers and put into operation.

Q-2-3-2: We heard followings on operation and maintenance established. Is it correct?

Answer by LRD

The correct answer is as follows.

(1) On maintenance, the government is responsible for the maintenance from Main pump to Pressure pump. Land owners are responsible for the maintenance after the pressure pump to individual hydrant.

(2) On operation, the government is responsible for hydrotechnical scheme (canals, pumping up to the pressure pumping station which is the last station) Users are responsible from the pressure pump to the terminal facilities.

(3) The operation and maintenance fee is computed with following equation.

$$\text{Cost} = R1 \times A1 + R2 \times W1$$

Where R1: maintenance unit price (Lei/hectare)

A1: area (hectare)

R2: operation unit price (Lei/cu.m)

W1: volume of water using (cu.m)

(4) The maintenance fee is counted with area scale. The repair cost of facilities which land owners are responsible is paid when it happens.

(5) The operation unit price is counted with volume of water applied. The volume is estimated from the frequency of irrigation. The unit price of operation is changed with the year depending on the price changes (e.g. price of energy).

(6) These fees are contracted between SCELIF and farmers or associations.

Q-2-3-3: When we heard, the above rule was just started. How is the present condition?

Answer by LRD

The present conditions are same.

Q-2-3-4: What are the issues faced on water management?

Answer by LRD

There are two issues.

(1) The actual use of irrigation schemes is low. Farmers cannot afford to pay for water fee. It is difficult and not economical to operate irrigation schemes if the percentage of the area actually irrigated is low.  
(2) Lack of irrigation equipment is the second issue. A part of investment in this year for irrigation has been for purchasing equipment (laterals and sprinklers).

Q-2-3-5: Do you have any law and regulation on water management?

**Answer by LRD**

No. We have a law called "law of land reclamation works." But it is under discussion within ministries involved in water management, Ministry of Water, Ministry of Finance and Ministry of Justice, etc.

Q-2-3-6: Do you have any technical guideline on water management? If you have, please show us some examples.

**Answer by LRD**

We have some technical papers showing how to open the gate etc., but management papers. Each irrigation scheme has an operation manual which is more or less water management manual for the particular scheme.

Q-2-3-7: How do you establish those guidelines? Please show us process of making those guidelines.

**Answer by LRD**

Those guidelines and operation manuals are prepared by designers at the same time with the last phase of design by ISPIF.

Q-2-3-8: How do you extend newly developed water management technology to users or farmers?

**Answer by LRD**

This is done by SCELIF which hold a meeting (usually Friday) with farmers for extension at the same time to establish the next week schedule. The Friday meeting is usually held for the next week irrigation. If the new technology is suggested, this will be extended through the meeting.

Q-2-3-9: How is the present situation of collection of irrigation fee from users?

**Answer by LRD**

Usually no problem except collection of fees from state farms which is the main users because they have financial problems. We call this problem financial stack. The state farms have his own debtors who has no payment.

## 2-4. Field Irrigation Systems

### General

Q-2-4-1: We heard that you have total 28 research points and have conducted research on crop water consumption over 20 years for eight standard crops. Please list up the research point names and show the locations on a map.

#### Answer by ICITID

Locations are shown in the photo taken by Kanamori.

Legend: Red shows only for drainage points.

Yellow shows irrigation and drainage research points.

Gray show irrigation points.

The 28 points are provided for field crops plus 4 for tree crops and vine. Because of many reasons, the number was reduced. The total number is now 19. But, only 11 of them are for the 8 field crops (winter weed, Maize, Sugar beet, Soy bean, Sunflower, Alfalfa, Bean, Potatoes and Maize after winter weed)

Q-2-4-2: Please show the data items collected at each research point, including meteorological data and other water requirement related data.

#### Answer by ICITID

All the points generally collect the same items, such as weather data, crop water use data, soil and water both chemical and physical evolution under irrigation conditions, ground water level evolution, crop irrigation regimes (applying different irrigation depths), different irrigation techniques. Weather measurements include rainfall, temperature, wind speed and directions, relative air humidity.

Q-2-4-3: Do you think that the 28 points and eight crops are enough to carry out the present development program. If No, please tell the suitable number of research points.

#### Answer by ICITID

No more 28 is necessary, and until now many data are accumulated for 10 to 15 years. We have data even from the other points. Some of the points are already out of use. Should be again in use. Some other points than 28 would be needed for research, but we don't know today exact program for irrigation and drainage. The 11 points now in use and need to be used with the newly developed devices.

Here some research points are already within the area of agricultural experimental stations in different soil and climate conditions. Service area of land for experiment for water consumption about one hectare for this purpose.

Q-2-4-4: Are there other Ministries or organizations collecting meteorological data than the above 28 research points?

Answer by ICITID

Yes.

Q-2-4-5: If Yes, please list up the organization names and number of observation points and data items.

Answer by ICITID

There are other organizations belonging to the National Institute for Meteorology and Hydrology collecting more items than we are collecting such as soil temperature, net radiation, which are, however, only limited points.

Q-2-4-6: Is it easy to refer the data from the other organization?

Answer by ICITID

Yes. But we have to buy the data.

#### Crop Yield Response to Water

Q-2-4-7: We think that you have studied crop yield response to water, which is the relationship between the frequency or amount of water applied and crop yield. Please list up the research place name, crop name and research year on the studies.

Answer by ICITID

We have made the studies at almost all our research points, and we set up relationship between crop water consumption and yield. These relationships are set up by statistical proceedings. We established correlations between these two elements. Until 1985, we made the correlation between the consumption and yield. The graphs shown in the book given Oct., 1993 (pp 144-147) shows that the horizontal is crop water consumption and the vertical is the obtained yield. The horizontal is the total crop water consumption which is made by rainfalls, irrigation rate and soil storage. Now we want to diversify the researches whose purpose is to quantify the influence of each element of crop water consumption, rainfall and soil storage and irrigation, influence on the yield in various periods of the growing season.

The test crop list is shown in Annex-1.

Q-2-4-8: How did you study the crop yield response to water?

Answer by ICITID

Usually, we used different (2 to 3) minimum soil moisture after which we applied irrigation water. This implies different (various) irrigation water depth and different irrigation frequency.

#### Water Requirements-1: Field capacity

Q-2-4-9: How do you determine the field capacity? For confirmation, the field capacity means the applicable maximum water holding capacity of soil for irrigation planning.



Answer by ICITID  
Mainly by field tests.

Water Requirements-2: Allowable soil moisture to optimum growth

Q-2-4-10: Please list up research places and research years on each crop for determining the allowable soil moisture for design.

Answer by ICITID  
We use the answer on Q-2-4-8  
The list is shown in Annex-1

Q-2-4-11: How do you show the allowable moisture level?

Answer by ICITID  
Either using soil moisture fraction of the amount between field capacity and wilting point or pF value. But usually, we use the first one, fraction.

Water Requirements-3: Soil water holding (storage) capacity

Q-2-4-12: How do you determine the soil water holding capacity?

Answer by ICITID  
Take soil samples and identify the water contents for the field capacity and allowable soil moisture. Compute the balance of moisture. Conduct these processes for each soil layer of the rooting zone soils. Finally, summarize the balance amounts in the rooting soils.

Water Requirements-4: Water consumption

Q-2-4-13: We heard that you determine the water requirements in design as follows.

Answer by ICITID  
Correct answer is as follows.

- (1) Measure the crop water consumption ( $E_t$ ) by the soil water depletion method at every 28 research point. In the method, soil sampling is done for every 25 cm soil layer at every 10 day interval. Compile the data of each month for each crop.
- (2) Compute the Potential evapotranspiration ( $E_{To}$ ) with Thornthwaite equation at every 28 research point.
- (3) Compute the crop coefficient for each crop with  $E_{Tr}/E_{To}$  or  $E_{Tr}/E_{pan}$  at every 28 point.
- (4) For the reclamation project area, compute the monthly averaged  $E_{To}$  per day from the neighboring meteorological data. After calculating  $E_{To}$ , we multiply it with the crop coefficient set up in this research point. Then, we made the difference between crop water consumption and rainfall recorded every month. At this reference, we add the soil storage and if

the some of these elements give us deficit of water, this deficit is covered by irrigation, and so we find the irrigation water requirements for the each crop, for every month of the irrigation period. This kind of calculation is made for each year of the range of minimum 30 years.

On the irrigation water needs resulted for every month, we use them to calculate the probability once per 20 years. In designing irrigation systems, we use the irrigation needs once per 80 years in the month with the maximum irrigation need usually July. Almost all crops are July except winter weed which is May or June or Corn double crop after winter wheat which is August or September.

Q-2-4-14: Please list up the crop names whose coefficients have been studied. The list will be written for each research point with the latest research year.

by ICITID

Every year, the coefficients are being improved. From 1970 to 1980 there was very wet decade, and during 80', there was dry decade. Thus 20 years. Our irrigation system is rotation. But now, there are many private owners. We need to deliver water by request, not by rotation.

Because the climate is not determinant for values for crop coefficients, we investigate and compare the coefficients for many years and the differences are not large.

Every year, the differences among June, July and August represent the month with the maximum crop water needs. The coefficient is near 1 or a little above one. So variation of the crop coefficients is less than 10% range.

Every year, the same eight crops are tested. The crop names are shown in Annex-1.

Q-2-4-15: Is the ETo computed from the Thornthwaite same as FAO reference crop evapotranspiration?

Answer by ICITID

Yes

EEC made study to find the best method to calculate ET, and they listed alter method used in different counties in eastern Europe.

We compare the ETo with Lysimeter and Class-A pan. We have the data for 18 years. The data are very close. Epan is used for warning and forecasting watering in operation.

Q-2-4-16: If No, have you computed the FAO ETo amount before?

Answer by ICITID

(See the above)

Water Requirements-4: Irrigation interval

Q-2-4-17: How do you determine the design irrigation interval?

Answer by ICITID

The interval is calculated by the ratio between irrigation depth and daily crop water consumption. Usually, it is between ten days and 14 days which is calculated at the maximum, July.

Irrigation Systems

Q-2-4-18: We heard the following percentage of irrigation methods. Are these correct?

- Sprinkler irrigation - 84%
- Furrow irrigation - 8.5%
- Mix of the above two - 5.9%
- Basin irrigation for paddy fields - 1.6%

Answer by ISPIF

Yes. The area of furrow irrigation is decreasing. Because we use aluminum pipe for furrow irrigation, but these pipes have been destroyed or used for other objectives. It means that a lack of aluminum pipes for furrow irrigation. Paddy area is decreased too. Because some of the paddy fields are privaterized and the owner has not enough techniques, etc.

Q-2-4-19: If No, please tell the correct percentage.

Answer by ISPIF

(See the above)

Q-2-4-20: Please classify the sprinklers into fixed type and portable type.

Answer by ICITID

Mainly Romania uses portable types.

Answer by ISPIF

100% is portable because of maintenance through of winter season.

Q-2-4-21: Are all the sprinklers produced in Romania? If No, please tell the country name from which sprinklers are imported.

Answer by ICITID

These are mainly Romanian made types. But we also import some sprinklers lately.

Q-2-4-22: We have the following information of the standard type sprinkler. Is this correct? If No, please give the correct information.

Answer by ISPIF

The correct answer is as follows.

- (1) Type - ASJ1-M
- (2) Nozzle pressure - 2 to 3.5 kg/sq.cm
- (3) Watering diameter per sprinkler - 34 m

(4) Sprinkling intensity - 6.6 mm/h

Q-2-4-23: What are the names of sprinkler production companies?

Answer by ISPIF

One big sprinkler company is called "Mechanical enterprise for agriculture Cluj (Intreprinderea Mecanica Pentru Agricultura Cluj).

Q-2-4-24: How do the companies sell the sprinklers?

Answer by ISPIF

The equipment including pipe lines, sprinklers and joints are sold by one company which buys the pipe lines and the sprinklers, cast the joints, welds the joints, and makes holes and the stands for the sprinklers. After assembling irrigation equipment, it sells the equipment to the farmers.

Q-2-4-25: How much is a sprinkler price of the most popular size?

Answer by ISPIF

The price in June was 2.3 million Lei (about 1500 US\$) for a set of 400m length pipes and 22 sprinklers. They are hand moved. Self propelled ones by the US company is 60,000 US\$. Rear hose equipment produced by BAUER in Austria including a 300m length of the hose was about 15,000US\$. The latter two are very productive but very expensive.

Q-2-4-26: Is the price suited for the standard size private farmers?

Answer by ISPIF (Concerning Q-1-1)

Most of the (1)state controlled commercial companies have private share holders. The state land is also cultivated by (2)agricultural research institutes which are public companies and (3)government farms. The private land is cultivated under four management forms as follows, (4)individual farmers, (5)informal (family or friendship) associations which are not registered, (6)formal associations and (7)private commercial companies.

For individual farmer having the land of the maximum 10 ha, the sprinkler set price is very high. For informal association farmers (from 20 to 300 ha), price is expensive. For formal association (up to 2500ha, average 1000ha), the price is medium. For state commercial companies, the price is cheap.

Q-2-4-27: How do the farmers obtain the sprinklers?

Answer by ISPIF

The farmers should get not only sprinklers but also the whole equipment either by purchasing from the manufacture or lending from SCELIF.

Before revolution, the former cooperatives bought equipment. These are privatized after revolution. These equipment are now under their ownership.

Q-2-4-28: We heard that the wear of the equipment appeared after short time and that the low efficiency of the equipment reduced the efficiency of the irrigation schemes and led to a high power consumption. What kinds of troubles

occurred in recent years?

Answer by ISPIF

- 1) Electric motor does not work because of a lack of parts.
- 2) Actual Pump Efficiency is lower than guaranteed efficiency.

Q-2-4-29: What kinds of causes of troubles have reduced the efficiency of the irrigation schemes?

Answer by ISPIF

Shortage of funds

#### Field Water Management

Q-2-4-30: We heard that the field water management is done as follows. Is this correct? If No, please show the corrected ones.

Answer by ICITID

The correct management procedure is as follows.

- (1) Directly measure ETo with Class A pans. The difference between Epan and three Lysimeters ET are checked at MARCULESTI research point.
- (2) Compute ETo of the 28 research points from the coefficient with pan evaporation amounts measured at the 28.
- (3) Obtain the coefficients (ETr/ETo) by field research at the 28 points for each month and each crop.
- (4) Estimate the water consumption amount by multiplying the ETo computed from the measured Pan evaporation by the coefficient.
- (5) The crop coefficient computed by ICITID are transmitted to SCELIF network. After this, The SCELIF collects the Epan data from their network in which a Epan is available for 5000 ha. They have Epan data. Then they calculate the crop water consumption and transmit the results to the farmers. The farmers apply water. When the soil water estimated reach the allowable soil moisture, they inform the farmers to start irrigation. Every irrigation system has Pan evaporation network and rain gage network, and they are recording daily base. SCELIF has satellite stations. Every irrigation system has the center for warning and forecasting watering and it is their duty to collect the data.

Q-2-4-31: We heard that the SCELIF holds a meeting once per week for farmers to inform irrigation time, irrigation amounts and spacing of sprinklers. Is this correct? If No, please tell the correct information.

Answer by LRD

Yes.

## Others

Q-2-4-32: We think that you have published or made manuals on field irrigation design and management. Please list up the manual titles in English with total page numbers and published year.

### Answer by ICITID

- 1) Prognoza Si Programarea aplicarii udarilor in sistemele de irigatii (Irrigation Forecasting and Programming in Irrigation Systems - 367 pages (1989)
- 2) Consumul de Apa Al Plantelor, Cu Aplicatii in Proiectarea Si Exploatarea Amenajarilor de Irigatii (Crop water consumption used in designing and operating of irrigation systems) - 112 pages (1988)

Q-2-4-33: What are the present issues faced on field water management and design?

### by ICITID

Design is done by ISPIF, and Operation is done by LRD and SCALIF.

Q-2-4-34: Please describe three research fields in order of importance (priority) which must be reinforced in ICITID in the future.

The catalog shows the priority of each laboratory.

## 2-5. Training

### Training Technical Staff

Q-2-5-1: Please give us the following information about training technical staff on LRD.

### Answer by LRD

- (1) Operation department of LRD is in charge of these courses.
- (2) Three course for graduate engineers (University graduate) 60-80 trainees per course.

Four to five courses for skilled labor and technicians (technical school graduate) which include around 100 people. Those are conducted in only winter time.

- (3) Frequency is during winter season. The term is usually 1 to 2 weeks.
  - (4) (This question was canceled.)
  - (5) No aids we have.
  - (6) We ask to the district company (SCALIF) to recommend the participants. Most trainees are SCALIF members and a few farmers. On the farmers, seasonal labors are farmers, and such a farmers brought to the courses.
  - (7) Teachers are various year to year. They are selected occasionally from ICITID, ISPIF and LRD.
  - (8) The facility is in ICITID. Sometimes, we use the facilities of MAF and the Department of State Farms.
- (by surveying)

There are two class/lecture rooms in ICITID. One has 200 sq.m (120 sheets) and another has 150 sq.m (49 sheets).

(9) Period of snow season is the limitation.

(10) The costs of conducting courses are shouldered by each SCELIF. The SCELIF has to pay.

(11) Other information is that 15 to 20 counties out of 41 are related for irrigation.

For the higher level specialists such as staff members in ISPIF or LRD, LRD conduct training courses not systematically, but time to time.

(1) The name of the responsible division or department for the training. Usually we don't have fixed training courses. Training courses are held by foreign experts.

The responsible division, therefore, is Division of Cooperation.

(2) Number of training courses, and the titles

WB loan courses which is one component of the study.

This year and last year, we have courses funded by WB (Loan aid). In training, some professor came from British university or British company and delivered lectures. Study tours are conducted in England and Italy.

Some of our staff went to England and France. In Pakistan one person works with British company for on-the-job-training.

-The term is two days to three months.

-Around ten courses for two years.

-Trainees are selected depending on the subject. If there are problems on O&M, we send someone to a company. To select the members, there is a test. Test subjects are technical capability and English.

-The training subjects are design, operation management, equipment, site activity, etc.

ISRAEL, Holland Granted Course

The above courses are mostly for ISPIF.

For these foreign assisted trainings, OHP and TV Video are used.

Q-2-5-2: Please describe the procedure of carrying out a training course.

Answer by LRD

We write to SCELIF how many sheets available, and they send participants. Some one establish courses with professors.

Q-2-5-3: How do you evaluate the training courses, and how do you apply the results for improvement?

Answer by ICITID

Evaluation is not systematically done.

Training Farmers

In each district of Romania there is general director of MAF. They have their tasks for farmers. During outside cropping, courses are held. In past, a lot

of training courses are held in the district. Each district has facilities. Now it is organized by Chamber of agriculture (House of Agronomist) who is the head of supervising agricultural techniques and extension services. This chamber takes over these tasks and organizes winter courses for farmers. This is not only related to Irrigation but also all kinds of techniques.

Q-2-5-4: Please give us the following information about the training farmers.

(1) The responsible organization for the training  
General director of Agriculture in the district (county) through the chamber.

(2) Number of training courses, and the titles  
There are many courses. In the former Ministry, we have technical directorate for education. we don't know. Now.

(3) Training frequency and the term of each course  
Answers should be by MAF.

(4) An example of training curriculum, list of test books and test methods.  
Answers should be done by MAF.

(5) List of training aids, e.g., overhead projectors, etc.  
Answers should be done by MAF.

(6) The way of selecting the trainees  
Answers should be done by MAF.

(7) List of number, speciality and grade of training teachers  
Answers should be done by MAF.

(8) Outline of training rooms and dormitory, including scale, number of rooms and provided facilities  
Answers should be done by MAF.

(9) Limitation of training, e.g. period of snow season  
Answers should be given by MAF.

Answer by MAF

See the Japanese memos because the answer was verbally given.

Q-2-5-5: Please describe the procedure of carrying out a training course.

Answer by MAF

See the Japanese memos because the answer was verbally given.

Q-2-5-6: How do you evaluate the training courses, and how do you apply the results for improvement?

Answer by MAF

See the Japanese memos, because the answer was verbally given.



### 3. Organizational Aspects

#### General

Q-3-1: You attached the institute chart of ICITID in the project request. The chart is, however, written in Romanian language. Please translate it into English.

#### Answer by ICITID

See the Annex-4.

Q-3-2: The request document states total 12 main objectives of ICITID and 6 research laboratories. Please describe that each laboratory is responsible for which objectives.

#### Answer by ICITID

Laboratory-1: Field irrigation schemes laboratory

- 1) Irrigation, micro-irrigation and antigel technics and technologies
- 2) Establishing the solutions and the set-ups for land reclamation projects for irrigation, surface and sub surface drainage and erosion control works
- 3) Water distribution automation and dispatching
- 4) The evolution of irrigation and drainage schemes during operation
- 5) The Hydrometeorologicative solutions for the reclamation of degraded lands
- 6) Strategies for efficient utilization of irrigation water, electric power (energy) and man power in irrigation and drainage schemes

Laboratory-2: Mechanization and automation of water application laboratory

- 1) Establishing the technical methods for execution (construction), operation and maintenance of the land reclamation projects
- 2) Fitting out techniques for land reclamation projects

Laboratory-3 Operation of the irrigation schemes laboratory

- 1) Water distribution automation and dispatching
- 2) Establishing the irrigation forecasting and warning elements and the water balance elements.
- 3) Strategies for efficient utilization of irrigation water, electric power (energy) and man power in irrigation and drainage schemes
- 4) The evolution of irrigation and drainage schemes during operation

Laboratory-4: Surface and subsurface drainage laboratory

- 1) Establishing the solutions and the set-ups for land reclamation projects for irrigation, surface and subsurface drainage and erosion control works
- 2) The evolution of irrigation and drainage schemes during operation
- 3) Strategies for efficient utilization of irrigation water, electric power (energy) and man power in irrigation and drainage schemes
- 4) The hydroameteorologicative solutions for the reclamation of degraded lands

Laboratory-5: Interrelations of the soil water-plant-atmosphere systems factors laboratory

- 1) Fundamental researches regarding the interrelations of the soil-water-plant-atmosphere systems factors
- 2) Establishing the irrigation forecasting and warning elements and the water

balance elements

3) Water application technologies in correlation with agricultural technologies

Laboratory-6: Optimization with agricultural technologies laboratory

1) Seeds production from superior biological categories (elite, super0elite) for field corps

2) Water application technologies in correlation with agricultural technologies

Q-3-3: Please list up the recent study topics with the conduction years of each laboratory in English.

Answer by ICITID

Laboratory-1: The Laboratory for development of agricultural lands for irrigation

1) Prospecting for identification the rehabilitation methods of irrigation developments

2) Exploratory investigations and technical methods for irrigation of plane agricultural lands, with heavy clay soils, as well as of slopes (under the new privatarized conditions)

3) Investigations into the strategies of identifying the efficient use of water pumping stations in irrigation schemes, correlated with the national system's power consumption possibilities

4) Automatization and monitoring of water supply in the irrigation systems

5) Engineering and technologies of irrigation, micro-irrigation and climatic protection of horti-viticulture crops

6) Methods of improvement the irrigation projects on the agriculture lands affected by salinity, due to oil-field exploitation

Laboratory-2: Laboratory for mechanization and automatization of the irrigation scheme, operation and maintenance of land reclamation works

1) Researches for drawing up the technologies of application the waste water resulted from the swine breeding complexes, into crop irrigation, having in view the power consumption reduction and the environmental protection

2) Basic researches of the advanced technology in utilization of irrigation devices and equipments, correlated with the property conditions

3) Investigation of the advance methodologies and technology of lesser utilization in execution and operating of the land reclamation works

4) Standardization of working technologies for the irrigation devices used from the home market and imported; for the protection of agricultural producers as well as of economical agents suppliers of irrigation equipments and installations

5) Diversification and rehabilitation of machines equipments and devices for the operation and maintenance of land reclamation works as well as for setting up the technologies of their efficient application

Laboratory-3: Operation Laboratory

1) Assessment of parameters for irrigation forecasting and warning inclusively those involved in analysis of the irrigation scheme sizing and elements of soil water balance, in pedo-climatic areas used for irrigation

2) Investigation of the possibility to decrease the irrigation water consump-

tion of plants up to allowable economic limit

- 3) Determination of solutions and technologies for reduction the water leakage in the irrigation canals
- 4) Methods and equipments used for water measuring and management in the irrigation development works
- 5) Researches with regard to the behavior of irrigation network and relevant hydraulic structures
- 6) Basic investigations in determination of methods for preventing the negative phenomena in evolution of source water, ground water quality from the point of view of water chemism and level, as well as of irrigated soils having in view the ecologic balance

Laboratory-4: The depth and surface drainage Laboratory

- 1) Scientific base of the works required to control the humidity and salts excess on the agricultural (lands including the water and salts balance and predication and warning of humidity salts excess)
- 2) Elaboration of technical solutions for management and technologies for operation-maintenance of the depth and surface drainage works (accomplished independently or together with other land reclamation works)
- 3) Influence of the depth and surface drainage developments works on the environment and ecosystems (soil, water, biologic and social0economic conditions)
- 4) Assessment of works economical potential in the depth and surface drainage schemes

Laboratory-5: The Laboratory for interrelations in soil-water-plant-atmosphere system

- 1) Investigations in heavy capacity lysimeters (10 cu.m) and 2.5 m depth with a accuracy weighing (+200 g) and data teletransmission by cable and radio to a processing mini-computer related to the theoretical bases of soil water retention and circulation and radioactive and nonradioactive pollutants towards plant and atmosphere
- 2) Determination in due time of the climate factors evolution that influences the crops evaptranspiration with the help automatic meteorological station and data teletransmission by cable and radio to the intercommunication system
- 3) Evaluation of pants water supply, radical system bio-activity and nitrogen circulation in the ground water
- 4) Researches regarding the influence of irrigation and drainage on the soils physical-chemical-properties (in cooperation with CIPA)
- 5) Investigations made for demarcation and characterization of geosystems and their evolution under the influence of complex irrigation projects (in cooperation with ICPA and Bucharest University)
- 6) Investigations made for physical and mathematical simulation of demand and supply phenomena, and correlation of the water demand for irrigation with the available resources (in cooperation with IANB-FIF and ICIM Bucharest)

Note: ICPA - Institute for Research and Design for Agriculture

IANB - University of Agriculture

FIF - Faculty for Land Reclamation and Environmental Assessment

ICIM - Institute for Research for Environmental Engineering

: This Laboratory is recently (1985 or 86) established.

Laboratory-6: Optimizing Laboratory

- 1) Irrigation of crops with water resulted from the depth and surface drainage scheme
- 2) Methods and technologies of crops irrigation correlated with agricultural technologies under various pedological and relief conditions
- 3) Irrigation technologies correlated with agricultural technologies of minimum works

Q-3-4: Please show the organization chart of ISPIF with the same manner as ICITID.

**Answer by ISPIF**

See Annex-2.

Q-3-5: Please explain the relationships between ICITID and ISPIF in terms of functions.

**Answer by ISPIF**

We have some studies and proceeding, design together with ICITID. They take our engineers for their activity. They ask us participation of study. ISPIF consider field investigation by boring.

**Answer by ICITID**

We give our research data to the ISPIF through LRD. Our data and concepts have been supervised by LRD and they became obligatory for both ISPIF and SCLEIF. All the projects made were done by this basis.

ICITID carries out investigations on crop water use, crop response to irrigation water, irrigation equipment, drainage, etc. ISPIF performs studies means topographic studies, soil and climate studies, hydrology and hydrogeology and geotechnic studies, etc.

In the past, our institute was in Bucharest, they were many other kinds of works done by ICITID like hydraulic modeling, geotechnical studies and others. The large institute is splitted into more parts, such as Institute of Soil Science, Institute of Hydraulics and ICITID in 1978. ISPIF had the same feature as today. Institute of Soil Science and Institute of Hydraulics are coordinated by Academy of Agriculture and Forest Sciences. But if these institutes have problems, these are solved firstly through the Academy, then to the MAF.

People working in ISPIF do not have any scientific degrees except the scientific director called Dr "Virgil Dobrre".

Q-3-6: Please show the organization chart of LRD with not so specific manner as ICITID but outline which shows the relations among the headquarter divisions, companies and regional offices.

**Answer by LRD**

See Annex-3.

In the Annex-3, REMATIF means one procurement company supporting all the SCLEIF.

Q-3-7: If you do not mind, please tell us the approximate budget scale of LRD, ISPIF and ICITID.

**Answer by ICITID**

Research budget is approximately 1 billion lei in 1994. The funds are from the budget of the government through research and development contract made by agreement of our Academy, and for some fundamental research contracts are with the Ministry of Research and Technology. Finally, Ministry of Research and Technology coordinates and provides the funds for all the contracts including contract through the Academy. Last year, we made contracts through MAF and LRD. We used to do this. But starting this year (1994), entire research activities in this country is coordinated by Ministry of Research and Technology. There also some small funds from different other sources. We also have production activities on agricultural areas. On what we produce in the research fields, 10% of the entire money spent for research activity per year, we obtain from this seeds and yield.

**Answer by LRD**

ICITID has subsidy budget from the Academy, Ministry of Science and Technology. The Ministry of Science and Technology asks MAF to do some investigation, and MAF ask it to ICITID and ISPIF. Contract is made between ICITID and Ministry of Science.

LRD 1994 Budget: the budget for internal expenditure - a part of MAF budget,  
the budget for investment for reclamation works  
- 13 billion Lei  
the budget for operation and maintenance for reclamation  
works - 125 billion Lei  
(53 billion Lei for operation, 72 billion for maintenance)

The budget for operation is for energy and other expenditures.

Personnel

Q-3-8: Please show the occupational rank chart of the technical staff in DLR including ICITID and ISPIF.

**Answer by LRD**

Since two weeks ago, we are not LRD. New name is "Autonomous Regie of Land Reclamation Project" according to Law 50 of 1994. In the case of LRD, ranking is as follows.

Secretary of state

1

3 Directors

(1) Operation and Maintenance & Construction, (3) Investment and Environmental,  
(4) Financial Accountant and Administration, including 41 staff members

1

1 Deputy Director on O & M

1

6 Division Chiefs

1

Advisers

1  
Engineers (Grade 1-4)

SCELIF has subsidy from MAF through LRD.

Answer by ICITID

Director  
1  
Scientific Director (Principal Researcher Grade-1), Technical Director  
1  
Principal Researcher (Grade 1-3)  
1  
Researcher  
1  
University (Faculty) Graduates

The University or Faculty graduate are promoted to be a Researcher after 2 to 3 years experience with a test. From the researcher to the higher degree up to the Principal researcher grade-2, The promotion is done by evaluating publications, experience and test results. From the grade-2 to grade-1, the achievement is evaluated with the Academy criteria.

In the laboratory for management and maintenance of irrigation and drainage systems, the number and work location are as follows.

	Principal Researcher Grade-1: 1 (LRD or ICITID)
	Grade-2: 3 (LRD or ICITID:1, Research point:2)
	Grade-3:12 (LRD:1, ICITID:1, Research point:10)
Researcher	: 6 (LRD:1, ICITID:1, Research point:4)
Total	:22

Answer by ISPIF

General Director  
1  
Director  
1  
Division Chief - Adviser  
1  
Deputy Chief  
1  
Chief of Office  
1  
Senior Engineer (Grade 1-3)  
1  
Design Engineer  
1  
Engineer  
1  
Technician (Medium Trained People)

Engineers are University graduates or Faculty graduates, and technicians are high school graduates. To be the higher degree of engineer, there is an examination. The chief is supposed to be selected from the Grade-1 Senior Engineers

who have many experiences.

Q-3-9: Please describe the responsibility of the above each rank.

**Answer by LRD**

The advisers are consulting special jobs like cooperation jobs such as reporting MAF, consulting to start projects, etc.

**Answer by ICITID**

The Principal researcher Grade-1 can teach University or Faculty students. The Grade-2 can also teach the students but can not be a professor.

**Answer by ISPIF**

(See Annex-2)

Q-3-10: Please list up the total number of personnel of LRD, ISPIF and ICITID respectively.

**Answer by LRD**

Secretary of State : 1 (Mr. Berveci)

Directors : 3

Deputy : 1 (O&M)

Division Chief : 6

Engineer Grade 1:1

2:12

3:12

4:2

Economist Grade-1 : 3

Lawyer consultant : 1

Secretary typist : 3

Total : 45

**Answer by ICITID**

See Annex-4.

**Answer by ISPIF**

See Annex-2.

Q-3-11: Please list up the present number of personnel with speciality of LRD, ISPIF and ICITID.

**Answer by LRD**

Land reclamation engineers : 19 (2-Phd)

Civil engineers : 6

Agronomist : 1

Mechanical engineers : 8

Electrical and automation engineers : 3

Economist : 3

Lawyer:1

Total 41 (+The Secretary and 3 Typists)

**Answer by ICITID**

The total university graduates are 99. The break down is shown below.

Production Sector:	Agronomist - 10
	Land reclamation engineer - 1
	Mechanical engineer - 2
Total	13
Research Sector:	Pedologist - 2
	Agronomist - 20
	Land reclamation engineer - 64
Total	86

The soil and water related activities are done by Agronomists.

**Answer by ISPIF**

The following approximate figures are informed.

Economist -31, Chemist-less than 10, Pedologist-less than 10,  
Topographist-20, Geologist-20, Hydrogeologist (ground water)-less than 10,  
Fishery-3, Civil engineer-all the others of the total 605

Q-3-12: Please describe the educational background of the personnel on LRD, ISPIF and ICITID.

**Answer by LRD**

All the staff members are University graduates.

**Answer by ICITID**

See the Annex-4.

**Answer by ISPIF**

See Annex-2

Q-3-13: What is standard life cycle (from becoming a engineer (researcher) to quitting job)?

- (1) Ministry of Agriculture and Food
- (2) Research Institute of Irrigation and Drainage and Reclamation (ICITID)
- (3) Institute of Studies and Design of Land Reclamation of Project (ISPIF)  
about: post (year from becoming a engineer (researcher))  
number of experience post (ex. planning, design, construction, management etc.)  
each academic background

(The question for MAF was canceled.)

**Answer by LRD**

In the past there is very strict criteria. Now they accept young people. It is about three years to promote from lower engineering grade to the higher. Grade one is more less equal to Division chief. After Grade-1, the promotion depend on the availability of position, the results of interview, etc.



**Answer by ICITID**

The approximate age of each rank is as follows:

- Principal Researcher Grade-1: 65 years old
- Grade-2: 40-45 years old
- Grade-3: 30-35 years old
- Researcher : 25-30 years old

Previously, promotion is limited with the age, but now no such a criteria.

**Answer by ISPIF**

To be civil engineer or agronomist, it is necessary to pass through university or technical institute for five years (primary school 4 years, secondary 8 years, university five years). After graduation, he/she should pass the special examination to be declared as engineer, and another examination called "LICENTA (license)". These examinations are done by University. Then if he/she want to get Phd degree, and receive the diploma of doctor at least four year in university or academy.

To enter ISPIF or organization, he should pass verification of the knowledge. Retirement of mail staffs 62 years old, and the female is 57 year old. Every five years, he/she will be raised the position.

Q-3-14: What is the subject for life cycle?

- (1) Ministry of Agriculture and Food
- (2) Research Institute of Irrigation and Drainage and Reclamation (ICI-TID)
- (3) Institute of Studies and Design of Land Reclamation of Project (ISPIF)

(This question was canceled.)

Q-3-15: How does the engineer or researcher elevate the skill?

- (1) Ministry of Agriculture and Food
- (2) Research Institute of Irrigation and Drainage and Reclamation (ICI-TID)
- (3) Institute of Studies and Design of Land Reclamation of Project (ISPIF)

(The question for MAF was canceled.)

**Answer by LRD**

There post graduate courses in University and training courses abroad or Romania.

**Answer by ICITID**

The skills are polished up by individual studying in the country and abroad, training courses for the specific items in the country and abroad, getting work fellowships abroad, participations of internal scientific sessions or international symposium or conferences and Phd. These are the case of high educated people.

For others, periodical training courses are organized by internal bases. The lectures are usually the research scientists working in the fields come from

only ICITID.

**Answer by ISPIF**

The engineers participate the post university courses. The courses are occasionally held. During participation, their salary is paid.

Q-3-16: How does the engineer or researcher build up a closer connection in implementation of land reclamation project?

- (1) Ministry of Agriculture and Food
- (2) Research Institute of Irrigation and Drainage and Reclamation (ICITID)
- (3) Institute of Studies and Design of Land Reclamation of Project (ISPIF)

(The question for MAF was canceled.)

**Answer by LRD**

We approve the project programs and projects, and approve funds to implement projects, receive progress reports each month, and if progress is not satisfactory we consider the payment.

**Answer by ICITID**

Research themes assure data for the land reclamation works like design, execution, operating irrigation systems from both irrigation and drainage and erosion control, and agricultural point of view. Teaching students for their practical works during summer time and training courses for technical staff from SCELIF. The researcher could individually take part with the design activity and he could assure the technical assistance for the building activity (e.x. performing irrigation, erosion controls etc.) and he assures scientific coordination of operating irrigation systems. The researcher could also be an associate professor or lecture within the university. He also writes publish papers.

**Answer by ISPIF**

First of all field investigation is discussed with owners and farmers, people from dept. of study and together recognize general matters like soil, hydrogeology, crop production etc. Then study the field by boring and so on. Then with total volume of studies, we prepare general scheme. With this scheme we are going in the field to discuss with the owners and farmers and after that to the prefecture of the county. Back to the office, we prepare the project. The project is submitted for the verification to the adviser commission in ISPIF. Then the team of the designer are going to take advised from local authorities, different ministries and then the project is submitted for approval. When the project is approved, it is put for offer. Then execution organization (company) asks to ISPIF for implementation. Then, during this whole construction period the designer time to time verify the work.

Q-3-17: What is outline of LRD?

- (include: region organization)
- (budget (1994): each section and project amount, personnel expenses, facility maintenance cost, etc., substance of work, share of total MAF budget)

Answer by LRD

LRD has no regional office. If we want to know something, we use SCELIF. Agricultural directorate is considered as the regional office of MAF, but we have only SCELIF.

The other answer should be discussed with MAF.

Q-3-18: What is the details organization of under the LRD?  
(include: region organization)  
(number of staff: each section (engineer, researcher, include the academic background))

Answer by LRD

LRD has no regional office. The other answers are shown in Annex-3 (Cont.)

Q-3-19: What are the problems of agricultural development in the implementation of economic reform plan (1993-1997)? And what is the concrete policy of MAF?

(This question was canceled.)

Q-3-20: What is the implementation of land reclamation project by LRD?  
(about the basic policy and outline of project implementation)  
(about result and plan:  
each project: project name, outline of project (purpose, size, substance, cost, period))

(This question was canceled.)

Q-3-21: What is the procedure of the implementation of land reclamation project by LRD?  
(please show the role of LRD, ICITID and ISPIF)  
(please show the procedure of each project size  
(ex. government-managed), and subsidy (ex. from national),  
subsidy rate)

And what is the law and outline?

Answer by LRD

- (1) Projects are requested by farmers or local authorities directly to MAF.
- (2) We estimate the necessity and opportunity of that particular project based on the technical and economical information applying existing data and considering the availability of funds. If it seems to be necessary, the project is included in the plan for the next year.
- (3) We provide some budget of design for a particular SCELIF. The SCELIF makes a contract with ISPIF or other consulting companies. Sometimes, they make it themselves for small projects.
- (4) The ISPIF or other company makes pre-feasibility study. This study shows raking of future feasibility study.
- (5) The pre-F/S is approved by LRD and funds for F/S are included for the next year project plan.
- (6) SCELIF receive the project budget and makes a contract with a consulting

company for preparation of F/S. If the investment estimated at the pre-F/S is more than 1 billion Lei, the contract for preparing F/S is done through bidding. Then F/S is done.

(7) F/S is approved.

Project size is classified into two. More than 1 billion Lei should be approved by the government. Less is approved by LRD and Ministry of Finance.

(8) At the next year, LRD give the budget to the SCELIF. The SCELIF makes a contract with a construction company.

(9) Construction is supervised by SCELIF. LRD controls it from time to time. Consultant helps implementation as requested from SCELIF. During or before implementation, the construction company prepares or requires to the consulting company to prepare detail drawings for execution.

Under the new autonomous regie, the former LRD and SCELIF are joined. The word regie is a kind of government institution; it is not privatized. It can get budget from the state budget or from fees which they collect.

Q-3-22: What is the detail of the guidance, supervision from MAF to LRD?

Answer by LRD

MAF has the general policy for agriculture. LRD should be a part of the general policy. The secretary of state who lead the LRD is a part of management of MAF itself. LRD is closed to the general strategy of the MAF. The secretaries of state have weekly ordinary meetings with MAF and other decision makers, and they report their problems and take decisions related with the general strategy of agriculture.

Q-3-23: What is the transition of budget in LRD?

(from 1990 to 1994,

separate: project amount, management amount, other etc.)

Answer by LRD

Project amount (investment) is very difficult to compare because of high inflation. The change of exchange rate are 14.9 lei/\$ in 1989, 22.4 in 1990, 76.4 in 1991, 305 in 1992, 752 in 1993 and now 1700 lei/\$. (Source: STUDY OF IRRIGATION & DRAINAGE IN ROMANIA")

	Unit price index
Investment for reclamation in 1990 - 5.7 billion lei	1.2
1991 - 1.2 billion lei	5
1992 - 3.7 billion lei	15
1993 - 6.4 billion lei	25
1994 -13.0 billion lei	50(?)

Note: the unit price is consider the price of 1989 as 1.

Q-3-24: What is the detail of the fiscal year budget in LRD?

Answer by LRD

0.5 billion lei for project design  
2.4 billion lei for irrigation equipment  
10.1 billion lei for project implementation  
total 13 billion

Q-3-25: What is the form of agricultural management?  
(year of data: ex. 1980, 1985, 1990, 1994)  
(rate of irrigation arranged and drainage arranged:  
each size of management, each form of land hold, each type of  
management)

(This question was canceled.)

Q-3-26: What is the existence of irrigation facilities arrangement and drainage facilities arrangement?

(This question was canceled.)

Q-3-27: What is outline of ICITID?  
(include: region organization)  
(budget (1994): each section and project amount, personnel expenses,  
facility maintenance cost, etc., substance of work, share of total  
MAF budget)

Please distinguish between national budget and private budget in each budget.

**Answer by ICITID**

Regional points include several research activities such as water consumption study, drainage study, testing irrigation equipment, correlating irrigation technologies with agriculture activities for studying and investigating irrigation methods, irrigation techniques, and SPAC activities. Some points conduct several research topics some are single topic.

The budget for 1994 is one billion Lei.

Q-3-28: What is the details organization of the ICITID?  
(include: region organization)  
(number of staff: each section (engineer, researcher, include the  
academic background)

**Answer by ICITID**

See Annex-4.

Q-3-29: What are the problems of agricultural development in the implementation of economic reform plan (1993-1997)? And what is the concrete policy of ICITID?

**Answer by ICITID**

By the law of land privatization, the irrigation systems which were the state administration and cooperative administration are divided to two points. The important part of the state property states as before. The rest of the land property was divided using this law into the individual farmers. About three million hectares are within the irrigation systems. Two million hectares are in use for irrigation purposes. The half of these (1 million hectares) has their irrigation equipment. The research programs were adapted according to this transition from the state property of land to the individual property for all the fields of activity. Third form of property would be the associations for individual farms.

On the policy, the demand for research data for the individual farmers appeared, and our institute is trying to deliver the data needed.

Q-3-30: What is the implementation of research by ICITID?  
(about the basic policy and outline of research implementation)  
(about result and plan:  
each research: research name, outline of research (purpose,  
size, substance, cost, period)

**Answer by ICITID**

The results found within this institute would be transmitted to our Academy and also to the LRD. We also use the results through published papers, e.g. with internal annual proceedings. We also maintain our direct connections with the institutions which ordered re-investigations.

Q-3-31: What is the procedure of the research by ICITID?  
(please show the role of LRD, ICITID and ISPIF)  
(please show the procedure of each research size  
(ex. government-managed), and subsidy (ex. from national),  
subsidy rate)

And what is the law and outline?

**Answer by ICITID**

See the answer of Q-3-7

Q-3-32: What is the detail of the guidance, supervision from MAF to ICITID?

**Answer by ICITID**

We are doing research programs of the Academy of Forestry and Agriculture. They give their agreement and then the programs are sent to Ministry of Research and Technology (formerly Ministry of Science). Special committee is made by several specialists from the Academy of Forestry and Agriculture, Ministry of Agriculture and Ministry of Research and Technology, and they judge the programs and budgets.

Q-3-33: What is the rate of stocks by national hold?  
And what is the rate plan or the stocks by national hold?

**Answer by ICITID**

The ICITID is not the stock organization. ICITID is supported by government by annual contract. ICITID is a public institution.

Q-3-34: What is the relation between the administration (ex. MAF, LRD) and ICITID?

**Answer by ICITID**

See the answer of Q-3-32

Q-3-35: What is transition of budget in ICITID?  
(from 1990 to 1994,  
separate: project amount, management amount, other etc.)

**Answer by ICITID**

There was high inflation. It is very difficult to compare the budgets. We can tell you the real value of the budget from 1990 to 1994 was almost constant. The other part of the budget than the research budget is very difficult to estimate because they have their own production activity which means different expenses and incomes year to year. The research budget in 1994 is about 1 billion lei. The production division is not the government institution. They don't have to report to the government.

Q-3-36: What is the detail of the fiscal year budget in ICITID?

Answer by ICITID

See the answer of Q-3-35.

Q-3-37: What are the relations between ICITID, ISPIF, MAF and LRD on this project

Answer by ISPIF

ICITID is subordinated to the Academy of Agriculture and Forestry. ISPIF is a Joint stock commercial company with 100% of shares held by the state. It is subordinated to state ownership funds and private ownership funds. And works are under the some guidance of LRD, MAF.

Answer by ICITID

ICITID would like to coordinate this project.

Q-3-38: What is outline of ISPIF?

(include: region organization)

(budget (1994): each section and project amount, personnel expenses, facility maintenance cost, etc., substance of work, share of total MAF budget)

Please distinguish between the national budget and private budget in each budget.

Answer by ISPIF

The answer was verbally done.

Answer by ISPIF

ISPIF has three regional branches, IASI, CRAIOVA and SALAJ.

Our budget is not published. Budget brake down is later on.

Q-3-39: What is the details organization of under the ISPIF?

(include: region organization)

(number of staff: each section (engineer, researcher, include the academic background)

Answer by ISPIF

See Annex-2.

Q-3-40: What are the problems of agricultural development in the implementation of economic reform plan (1993-1997)? And what is the concrete policy of ISPIF?

**Answer by ISPIF**

Our involvement on the reform plan is rehabilitation and modernization of the existing land reclamation projects, and to adapt them to the new land ownership, and on the other hand we assist private farmers in setting the water users associations or other kinds of associations for better operation and maintenance of existing land reclamation works. All the reclamation works are included.

- Q-3-41: What is the implementation of project by ISPIF?  
(about the basic policy and outline of project implementation)  
(about result and plan:  
each project: project name, outline of research (purpose,  
size, substance, cost, period)

(This question was canceled.)

- Q-3-42: What is the procedure of the project by ICITID?  
(please show the role of LRD, ICITID and ISPIF)  
(please show the procedure of each project size  
(ex. government-managed), and subsidy (ex. from national),  
subsidy rate)  
And what is the law and outline?

(This question was canceled.)

- Q-3-43: What is the detail of the guidance, supervision from MAF to ISPIF?

**Answer by ISPIF**

MAF is no guidance and supervision directly. LRD supervising the project accomplished by ISPIF. Only the project requested by LRD are supervised by ISPIF. When we are working on contract with the Academy of Agriculture and Forestry Science (ASAS) and Ministry of Research and Technology, they supervise each respective contract.

- Q-3-44: What is the rate of stocks by national hold?  
And what is the rate plan or the stocks by national hold?

**Answer by ISPIF**

A 100% of the stocks are held by the state. About planning, it is very difficult to answer.

- Q-3-45: What is the relation between the administration and ISPIF?  
(This question was canceled.)

- Q-3-46: What is transition of budget in ISPIF?  
(from 1990 to 1994,  
separate: project amount, management amount, other etc.)

**Answer by ISPIF**

The answer was verbally given.

- Q-3-47: What is the detail of the fiscal year budget in ISPIF?  
(This question was canceled.)



#### 4. FRAMEWORK FORMULATION ASPECTS

##### Project Purpose

Q-4-1: We found in your request that you require the rehabilitation of the irrigation schemes which involves installation or upgrading of irrigation equipment, redesigning the schemes for small farms and training your specialists in the management of the irrigation schemes in the new condition of the land privatization. We think it little bit too wide to implement our cooperation project, and we did not grasp the core of your requirements. Please let us know the core to delineate your request.

##### Answer by LRD

It should be defined together on what is the most suitable equipment and method for small farmer entities (40 to 300 ha). The core is how to modify the system for the small scale farms including management system and closer relations with the farmers.

Q-4-2: Where do you place our cooperation project in your agricultural policy (definition of our project in the overall development policy)?

##### Answer by LRD

This project is related to the privatization of the land meaning to improve the services for the private farmers.

##### Activities of Experts

Q-4-3: What is your specific requests on objectives and activities of the expert on irrigation systems?

##### Answer by LRD

The expert identifies the modification of the existing systems for the new situations. Engineers should asses the real condition and advise to modify. The expert manages the water after pressure pump.

Q-4-4: What is your specific requests on objectives and activities of the expert on water management? What is the demarcation to the expert on irrigation systems?

##### Answer by LRD

The expert has to give advises on how to improve water distribution systems and to increase the efficiency of use. He will cover from the intake point up to the pressure pump.

Q-4-5: What is your specific requests on objectives and activities of the expert on design?

##### Answer by LRD

The expert advises design activities in ISPIF regarding rehabilitation of the existing irrigation projects.

Q-4-6: The following three questions are for the expert on information systems.

- 1) What is improved in the information system on this project?  
And what is the purpose?

Answer by LRD

We have not been very much done on information systems. British consultant elaborate management information systems this summer which has not been implemented due to the shortage of funds, in ISPIF and LRD. The expert should review this project and implement in this cooperation project.

- 2) What is the concrete detail of activities and objectives by expert requested in the improved field of information system?  
And what is the purpose?

Answer by LRD

Because we are not familiar with the details of information systems, it is difficult to answer.

- 3) What is the concrete detail of activities and objectives by Romania in the improved field of information system?

Answer by LRD

We want basic data on irrigation and maintenance over the country.

#### Equipment and Materials

Q-4-7: What are the main equipment (for research or examination) which you have now?

- (1) Ministry of Agriculture and Food (MAF)
- (2) Research Institute of Irrigation, Drainage and Reclamation (ICITID)
- (3) Institute of Studies and Design of Land Reclamation (ISPIF)

please list up about: field, maker, made country, installation time, state of utilization)

(The question for MAF was canceled.)

Answer by LRD

There five PC. All the makers are Samton (IBM compatible) 286 type processor in the US. All the printers are Epson. These are installed last year. We are using them full time as word processor.

Answer by ICITID

- 1) Pivot for small farms: We had old ones for large area made in Romania which is not any more made in Romania. The maker is INSYIRIG in BALS. It was purchased in 1981. Now, out of use.
- 2) Neutronic device: We had three meters, and two of them are in use. Those two are made in Romania, and the other one is US made. The maker is Troxler, which is out of use. The Romanian maker is IFIN. The two were bought in 1978, the US one was 25 years ago.

- 3) Spectrophotometer: We have very old one which is out of use. It was bought in 1968.
- 4) Distiller: We have very old one. Only one machine. (We many times asked the soil science institute to do chemical test with payment.)
- 5) Audio-video: We have one which is very old type. The maker is Panasonic installed in 1991. It is used frequently for training and used in the fields for research purposes.
- 6) Pressure plate and Pressure membrane: One each. The both are very old.

**Answer by ISPIF**  
(The Team surveyed it.)

Q-4-8: What are the specification, the amount (rough estimate), the supply country, the installation place (plan)?

**Answer by ICITID**  
The supply makers will be Japanese ones. These will be installed in ICITID.

Q-4-9: What is the relation between the expert requested and the equipment requested?

**Answer by LRD**  
Irrigation equipment and cars are first priority.

Q-4-10: What is the computer system needed after this? (Annex 1 & 2)  
about : (1) outline of computer system  
(2) number of staff (system engineer, operator etc. (include academic background separately)

**Answered by LRD**  
We need to provide main information regarding operation and maintenance data of the irrigation projects such as quantity of water applied in the field on the corps, power consumption, running hours of pumps, technical status of pumping equipment, etc.

We have no specific staff on the information system.

#### Training in Japan

Q-4-11: What are the field and the reason for training requested?

**Answer by LRD**  
The field is management of irrigation systems to improve the experience.

Q-4-12: What is the detail of training requested?  
about : field, training organization in Japan, period, number of trainee, belonging organization etc.

**Answer by LRD**  
Fields are shown in the request. About the organization, please recommend us the suitable organizations. The number of trainees requested are at least 10 people from LRD, ICITID, ISPIF and SCILIF.

Q-4-13: What is the relation between the expert requested and the field of training requested?

Answer by LRD

We need the course topics either here or Japan mainly referring to new methods and modern equipment.

Q-4-14: How many English speaker in the engineer and researcher?

Answer by LRD

There are total about ten in LRD, ISPIF and ICITID.

## 5. OPERATIONAL ASPECTS

### Counterpart

Q-5-1: What is the disposition plan of counterpart of the expert requested?  
about : field (leader of the project, coordinator,  
expert in irrigation systems,  
expert in water management,  
expert in design  
expert in information system  
number of counterpart: full time, part time  
special subject of counterpart, post  
English speaking ability: possibility

#### Answer by LRD

Further discussions should be made.

At least one full time counterpart will be assigned for each expert.  
They can speak English except those on information systems.

Q-5-2: Who does decide the disposition of counterpart?

#### Answer by LRD

The Secretary of State decides it together with the director of ISPIF and ICI-TID.

Q-5-3: How level (rank) of organization is the disposition of counterpart decided? And how long does it take to the decision?

#### Answer by LRD

University graduate engineers (Grade -2) will be quickly assigned after agreement.

Q-5-4: Is it able to dispose the counterpart that can do with the expert always?

#### Answer by LRD

Yes

Q-5-5: How are the staff members that support the project able to provide except the counterpart?

#### Answer by LRD

Divers, Office clerk, Cleaning office staff, other to keep office.

### Project budget

Q-5-6: Is it able to bear the project budget of Romanian share?  
And will the budget of project be appropriated in the national budget?  
(the budget of project:  
ex. maintenance of project facility, fuel and right,  
installation and maintenance of equipment and other materials  
requested action cost of the counterpart etc.)

Answer by LRD

Yes.

We need to know the amount of local costs because we have to request the budget to MAF at least three months before the beginning of the fiscal year which is 1st of Jan.

Q-5-7: When does the national budget decide?  
And when does the fiscal year begin?  
When is the national budget requested?

Answer by LRD

See the above.

Project office

Q-5-8: How are the facilities of Research Institute of Irrigation, Drainage and Reclamation (ICITID)?  
(please show us the rough drawings)

Answer by ICITID

(The drawing was given.)

Q-5-9: What are the rooms, house and land for expert able to be prepared?  
condition : ex. space of desk, personal computer, telephone, facsimile, and copy machine etc.,  
rooms of short term experts, etc.)

Answer by LRD

We can offer the spaces according to the needs. And accommodation is only in ICITID. What we can offer are desks, chairs and telephones.

Q-5-10: What are the facilities for the project action?  
about : outline of facilities for the project action  
kind, purpose of utilization, size inside of facility,  
attendant facility, etc.  
facility: existing or new creating or more creating  
(if new creating or more creating is, please show  
us the construction plan and funds)

Answer by LRD

We need more detailed explanation.

Implementation organization

Q-5-11: What is the project organization program now?

(This question was canceled.)

Q-5-12: How is the easy access to land reclamation projects and other places of interest?

Answer by LRD

Very easy

Others

Q-5-13: Is the exemption of taxation provided for the machinery? These are necessary for implementation of the cooperation project.

Answer by LRD

Yes. We have no taxes for grant aid equipment.

Q-5-14: Is the exemption of the customs fee and smooth customs formalities provided for the machinery? These machinery are necessary for the implementation of the cooperation project.

Answer by LRD

Yes.

6. LIFE CONDITION ASPECTS

Q-6-1: How is the treatment or condition of the foreigner dispatched by the other foreign countries?

Answer by LRD

We think no problem. More details should be asked to the Japanese Embassy.

Q-6-2: Can the Japanese experts accept not less treatment or condition than the other countries' officials?

Answer by LRD

Yes.

Q-6-3: Is it possible that the Japanese expert and his accompanied family accept the followings?

Answer by LRD

Yes for all the following questions.

- (1) Guarantee of their social position in Romania
- (2) Right for affording medical services
- (3) Right for affording education, if they wish
- (4) Freedom of their movement/trip in Romania except military places
- (5) Finding convenient houses
- (6) Other social services same as Romanian citizen

Q-6-4: Is the tax exemption provided for equipment required for the Japanese expert and his/her accompanied family to work or live in Romania? The equipment include vehicles. This exemption is necessary for importing when they come and for exporting when they leave after assignment.

Answer by LRD

Yes.

Q-6-5: How is taxation to the Japanese expert and the accompanied family?

Answer by LRD

There is no tax.



## SURVEY RESULTS OF THE SCELIF "GIURGIU"

### Outline of GIURGIU SCELIF

A map shows GIURGIU County. Romania has 40 counties and Bucharest. Accordingly There are 41 SCELIFs. GIURGIU county about 270,000 hectares arable land. The irrigation & drainage covers the surface of 167,000 hectares. The scale of GIURGIU country is the average in Romania. These irrigation areas are distributed on the northern part and southern part of the county. The middle part has no irrigation facilities.

### Organization Structure

The headquarters of GIURGIU county has 30 staff members including 22 Engineers, 5 economists and 3 technicians (medium trained people). The 22 engineers include 17 reclamation engineers and 5 mechanical engineers and energetic engineers.

There is a General Director. Under him, there are a Technical Director and Economical Director.

Under the Director there are four Sections - (1) Section of Operation for Land Reclamation Activities, (2)Mechanic and Energetic Section, (3) Investment Section, and (4) Administrative Supply Section.

In addition, There are Accountancy Office and Office which deals with salaries and technical plan (the SCELIF does technical works for land reclamation activity). The chart is shown in Annex-5.

### Provisions

The SCELIF is recently introduced two Personal Computers, and four women are now under training to operate the PC. Generally in Romania, PC is introduced after revolution.

### System and Scheme

The word "Scheme" is defined from technical point of view, whereas "System" is defined from administrative point of view. The schemes are, therefore, identified in design maps. Some of the system may have the territory of other neighboring schemes. A scheme may include a number of systems. This SCELIF has 8 schemes which are not complete schemes because they exist over the county boundaries.

### Activities

The SCELIF people are helping in the systems and giving information to LRD. The irrigation area of 167,000 hectares are divided into 7 systems. The scale of each system area between 10,000 and 30,000 hectares.

In one system, there are a System chief, one economist who is also the chief accountant, and one land reclamation engineer who do technical matters., one electromechanical engineer who deals with pumping, one agronomist engineer who deals with watering crops. Within one system they have a mechanical workshop which repairs and maintains irrigation field equipment and machinery. All these are working at the headquarters of the system.

In a territory (a part of the system), there are on average 8 people for operating and maintaining pressure pumping stations (SRP) and pumping (SPP).

These people keep the permanent contact with farmers in the territory.

#### SCELIF's Main Tasks

- (1) Supply materials and equipment.
- (2) Perfect contracts for providing water for irrigation to farmers in the area.

SCELIF is keeping economical situations of these activities.

#### Budget

SCELIF has the budget through LRD, and get water fee. The latter is not much, because the price of water provided to the farmer is not easily cashed back to the SCELIF. The farmers cannot afford to the payment. The price of water of 1000 cu.m for irrigation purposed is now about 50 dollars.

#### Relationships with Other Organizations

ICITID is research institute. Their results from their activity are made public for ISPIF, SCELIFs throughout of the country to use them in every day activity.

#### Problems

1) Before 1989, regarding land tenure, there were only two forms, which were large surface state farm (I.A.S) and Cooperative farms (C.A.P). After 1989, the ex-state farms became commercial farms, and the C.A.P became several forms. A part of the land was back to farmers and the relatives of the farmers. Some of the owners do not want to stay there. The farms are, thus, scattered. Now, there are 7 million small land owners (each is owning between 0.5 and 10 haectars). One hydrant covers a 4.25 hectares. It is, thus, very hard to supply water to the scattered farms. This is the reason why it is difficult to supply water for small farmers.

2) One of the main problems is a lack of in field manual move irrigation equipment such as aluminum laterals, and limited number of hose reel equipment. These are produced in Romania, but bad quality. Especially, the rubber is not good quality. These rubber materials meet very had national conditions and quickly deteriorated. The director stresses that the main problem is to purchase a good equipment. There are some companies from the US and France. But there are no currency to buy them.

3) Another problem is consuming a big energy. Many water resources are in Danube. The processes are as follows.

- (1) The first lift is 10m high.
- (2) The water is conveyed through canals at 80 cu.m/sec.
- (3) Another lift is 70 m high. The station with 70 m high has 14 pumps, each of which perform 5 cu.m/sec.
- (4) The water is distributed into 7 open canals. Some of the canals are made lining but some are not.
- (5) The water is put into pressure pipe network to distribute. All these networks are containing water losses and energy consumption.

In order to maintain, the function level for all the area of 7 canals, the station has to be continuously under operation for 24 hours. Yesterday, one land owner on the edge of the scheme requested water, located some 45 km from

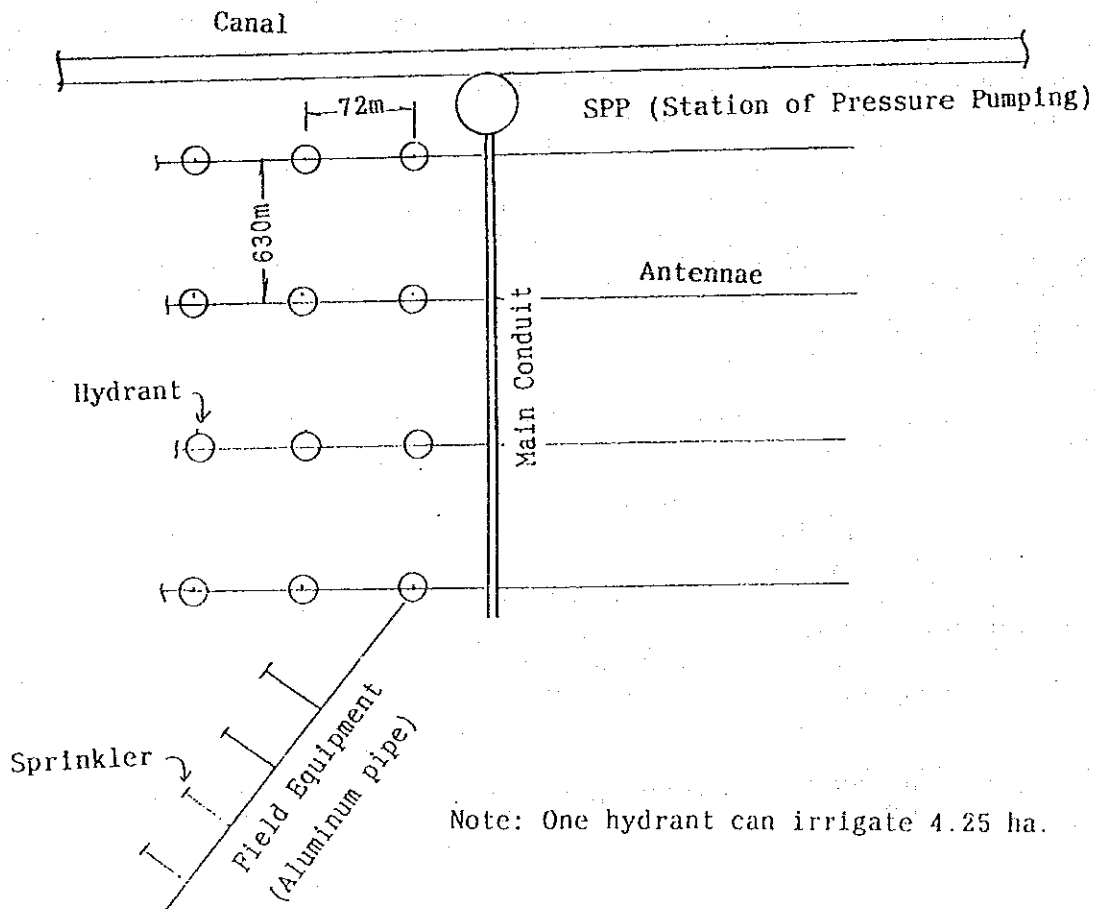
the Danube (water source). In this case, the SCELIF has to supply 1.5 million cu.m of water, but the land owner which requested needs only 10% of this water. If the pumping station stopped 3 or 4 days, all the water of network will be gone.

Ideas on Activities in the JICA Project

1) We can measure the energy consumption within the pumping stations, but we do not know how much of water is consumed by each landowner. Water balance survey with a specific plot will be very important. SCELIF and ISPIF will be directly in charge of such a pilot project. All these are under local conditions of the SCELIF. ISPIF designs the study and SCELIF conducts the study. The research data will be analyzed by ISPIF and SCELIF. In SCELIF, there are some people qualified to conduct this analysis.

2) Another idea is to prepare demonstration equipment to show them. It will have beneficiaries for Romania.

Name of Each Line



Note: One hydrant can irrigate 4.25 ha.

Answers of Questions given by the Survey Member in charge of Water Management

1) This year, the irrigation demand represented by both private farmers and state farmers was 20-25% of the service area of the irrigation systems. Because the private farmers are very poor and not well organized, 90% of the 20-25% belongs to the state farms, only 10% for private farmers, which is negligible share. Since the private farmers don't have irrigation equipment, and price of water is very high, the demand is very low. They want irrigation, but they can not afford to pay the water price.

2) Before 1990, 70% of irrigation area provided irrigation equipment. After that time, irrigation equipment are provided for only state farms. Private farmers can not afford to buy them. The former cooperative farmers received irrigation equipment, but they didn't use the equipment. They modified the use of equipment. As the results, the equipment have been broken. The state farms have kept and used the equipment.

3) Individual farmers' associations would like to have the equipment. In 1990, these equipment are distributed without fee to the members. The farmers distributed used and destroyed them. For example, they used a pipe for heating and, it was broken. Because of enough rain this year, they used the equipment for other purposes.

4) Some of individual farmers, about 50% of the all, maked associations. All the associations were not kept. Some of them failed and splitted again. Some are reformed as another organization. They are looking for better kind of association. Some associations are managed by very serious people, but the others failed. SCELIF has the own equipment. Some of them were bought form the former cooperatives, and some from farmers. We use them for farmers. The machinery center prepares irrigation equipment. But the demand of irrigation equipment is mainly from the state farms because the individual farmers are poor.

5) On the water fee, there are contracts between SCELIF and individual farmers. Both of association farmers and state farmers make the contracts. About 30 to 40% of the total area in irrigation systems are contracted. This year, maize which is the main crop here, had enough natural rainfalls, and thus, the water demand was very low. But when drought is severe, they receive water. In July, about 200 mm of rainfall occurred in the area. This year is a very special year. If no rain, probable demand would be up to 40 to 60% of the possible area of the farmers. (As we said) About more than 90 of the demands are from state farms.

6) On electric fee on pumping, the cost for pumping water to the canal is subsidized by the government. Pressure pumping costs are provided by farmers. About 70% are from the state and the rest are from the users. The efficiency of canal is low, because irrigation water is lost from the canal. If the farmers use all the systems, the efficiency is high. But now only a part of the systems is used, and the efficiency is low. Usually the irrigation area is large scale. But lately, only a part of the area is irrigated. For small irrigation systems the efficiency is high.

7) On technical problems on irrigation, the main problem is a lack of measuring water in the canals and pumping stations. The accurate assessment is very difficult. The pressure pump is the last stage of irrigation. From the Danube, pumping water is with 3 steps up to 70m high from the Danube. Some ICITID members deal with this.

8) On the marketing procedure, the individual farmers ask the state company to sell the products. If there are difficulties between the farmers and the company, the farmers can not sell the products. We are looking for better form of such a kind of market.

9) For the question of using soil cement, ICITID is not using it.

TERRITORIAL RESEARCH POINTS FOR CROP WATER CONSUMPTION STUDY  
 AND TYPE OF STUDIED CROPS

A. Actual research points - field crops ( 8 crops : winter wheat, maize, sugar beet, soybean, sunflower, alfalfa, bean, potatoes and corn after winter wheat)

N/C	Research point	Year of start
1.	Oradea (SCA)	1969
2.	Cluj-Napoca (UA) (only sugar beet, soybean and potatoes)	1979
3.	Gogoşu-Mehedinţi	1975
4.	Maglavit - Dolj	1976
5.	Simnic - Dolj (SCA)	1985
6.	Caracal - Olt	1969
7.	Băneasa-Giurgiu (ICITID)	1975
8.	Dor Mărunt-Călăraşi	1975
9.	Mărculeşti-Călăraşi <sup>++</sup>	1990
10.	Mihail Kogălniceanu-Tulcea	1975
11.	Galaţi <sup>++</sup>	1990
12.	Popăuţi (SCPO)-Botoşani	1989
13.	Cosmeşti-Tecuci	1976
14.	Suceava (SCA) (without soybean & sunflower and corn after wheat)	1969
15.	Bacău (SCPL) (only wheat, maize, alfalfa and potatoes)	1987

++ crop water consumption studied in conditions of under ground water supply.

## Annex-1 (Cont.)

## B. Abolished research points for crop water consumption (8 crops)

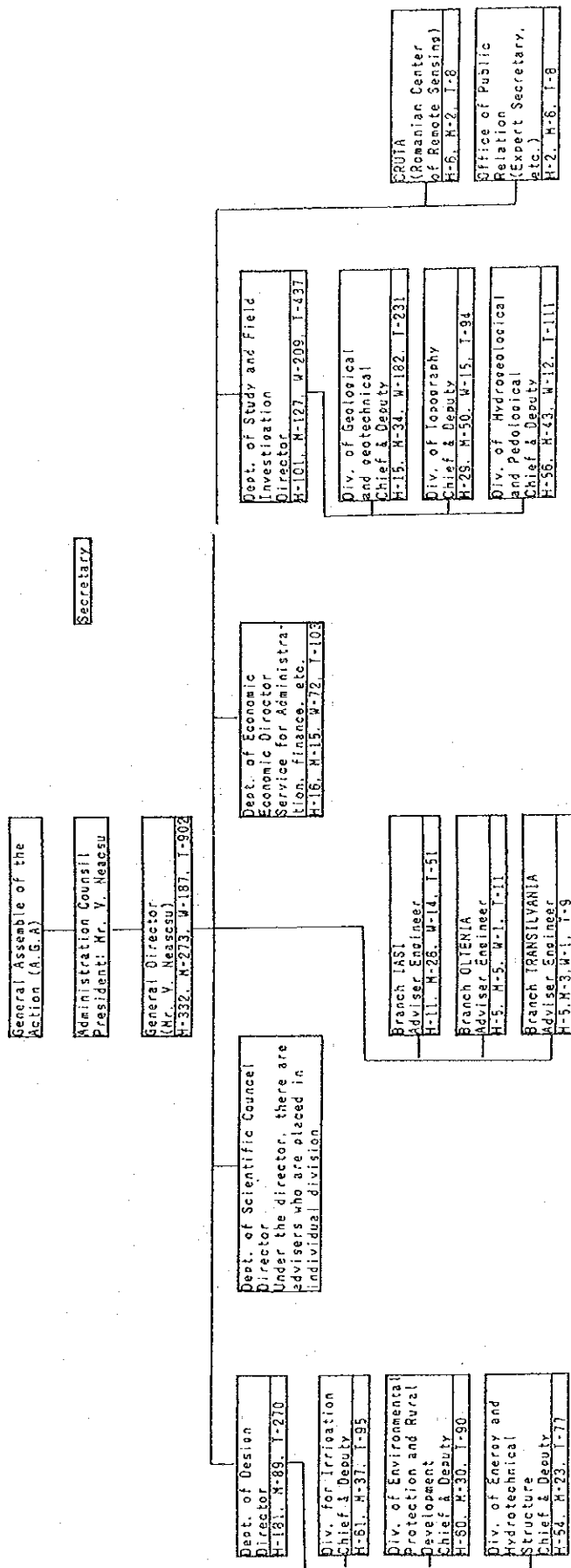
N/C	Research period	Period of research
1.	Livada (SCA)	1976-1985
2.	Arad (SCPL)	1969-1990
3.	Timișoara (only soybean and maize)	1979-1990
4.	Timișoara (underground water supply)	1987-1989
5.	Malu Mare-Dolj	1969-1985
6.	Drăgănești-Vlașca	1975-1990
7.	Căteasca-Arges	1979-1992
8.	Berceni-Ilfov	1977-1990
9.	Mărculești (SCCI)	1969-1989
10.	Valu lui Traian (SCCI)	1969-1989
11.	23 August-Constanța	1976-1980
12.	Insula Mare a Brăilei	1980-1990
13.	Brăila	1969-1989
14.	Podu Iloaiei (SCA)-Iași	1969-1990

## C. Actual research points for the study of the response of crops in conditions of water underinsurance (Apply fees etc.)

N/C	Research point	Start of experience
1.	Valu lui Traian (maize)	1985
2.	Caracal (maize)	1990
3.	Brăila (SCASS) (sugar beet and soybean)	1990
4.	Băneasa-Giurgiu (soybean)	1992
5.	Suceava (SCA) (potatoes and sugar beet)	1985
6.	U.A.Cluj (maize and soybean)	1988

## D. Horti-wine growing crops

1.	Focșani (SCPP)	1987	Apple
2.	Isaccea-Tulcea	1987	Apricot
3.	Băneasa-Bucharest	1980	Apricot
4.	Dăbuleni (SCCPN)	1978	Apple, Pear, Peach and vineyard
5.	Bacău (SCPL)	1937	Vineyard and vegetables
6.	Oradea (SCAZ)	1990	Vegetables (cabbage, pepper, eggplant)
7.	Maglavit-Dolj	1990	Vegetables (tomatoes, pepper)



Note: H-University graduates  
 : M-High school graduates  
 : W-Workers  
 : I-Total

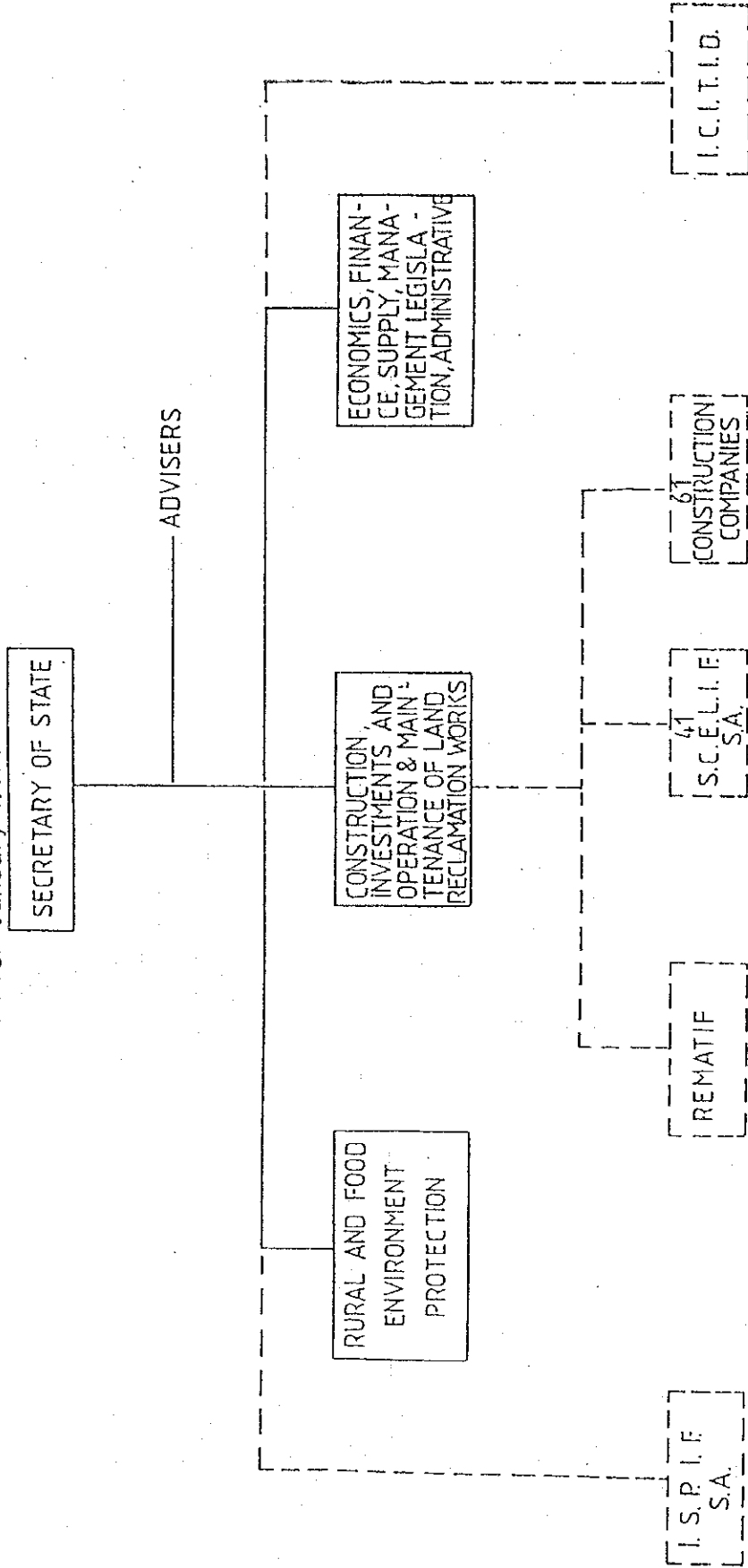
Figure Organization Chart of Institute of Studies and Design of Land Reclamation Project (ISPIE)



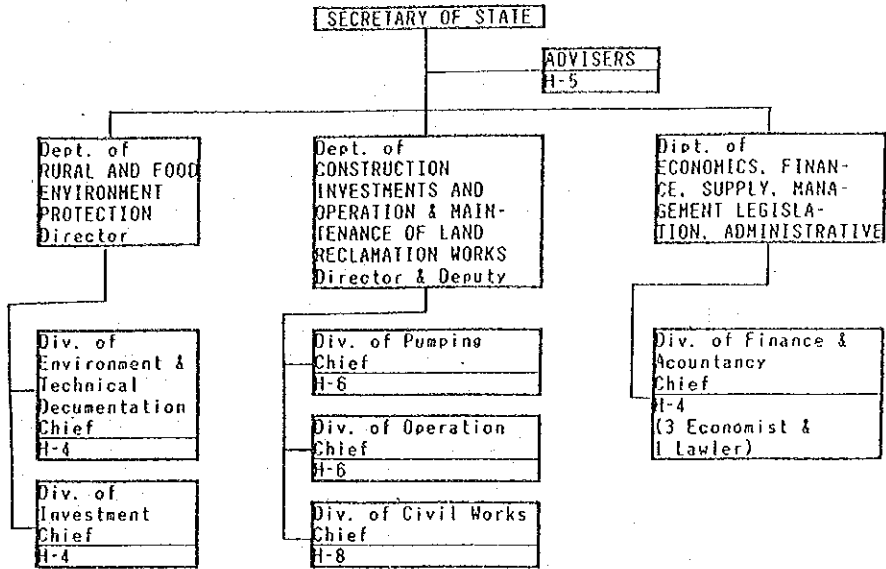
Figure 2.3  
Organisational chart of the  
Land Reclamation  
Department

LAND RECLAMATION DEPARTMENT OF MINISTRY OF  
AGRICULTURE AND FOOD

(After January 1993)

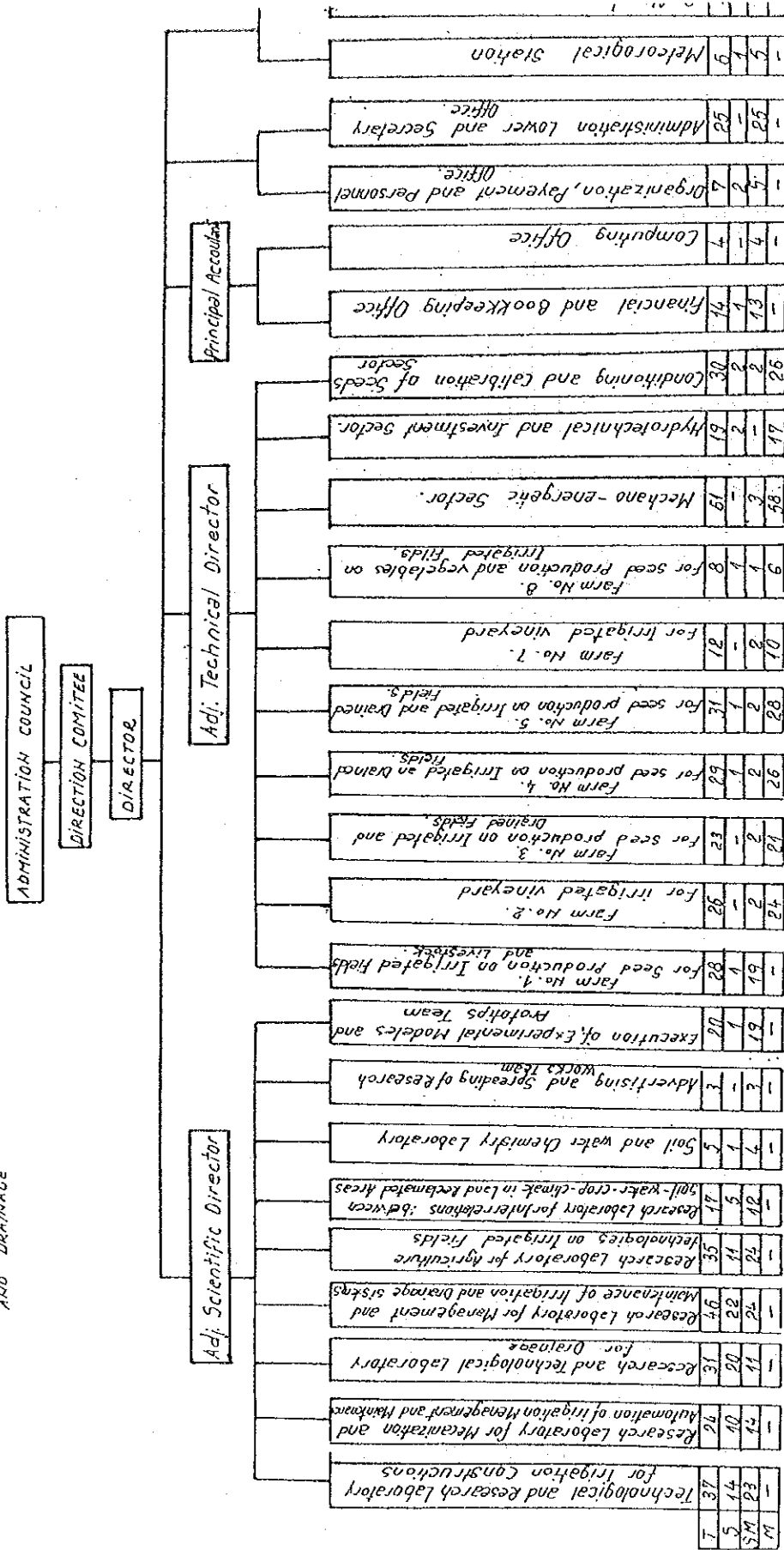


SOURCE: CONSULTANTS' ESTIMATE



Note: H-University Graduates  
 : Three typist secretaries are for the Secretary, Dept. of Costruction and Dept. of Economics

FOOD AND AGRICULTURE MINISTRY  
 AGRICULTURE AND FORESTRY SCIENCES ACADEMY  
 RESEARCH AND TECHNOLOGICAL ENGINEERING INSTITUTE FOR IRRIGATION  
 AND DRAINAGE



T. Total	356
C. conductere	4
S. studii superioare	96
SA. studii medii	209
M. muncitori	248

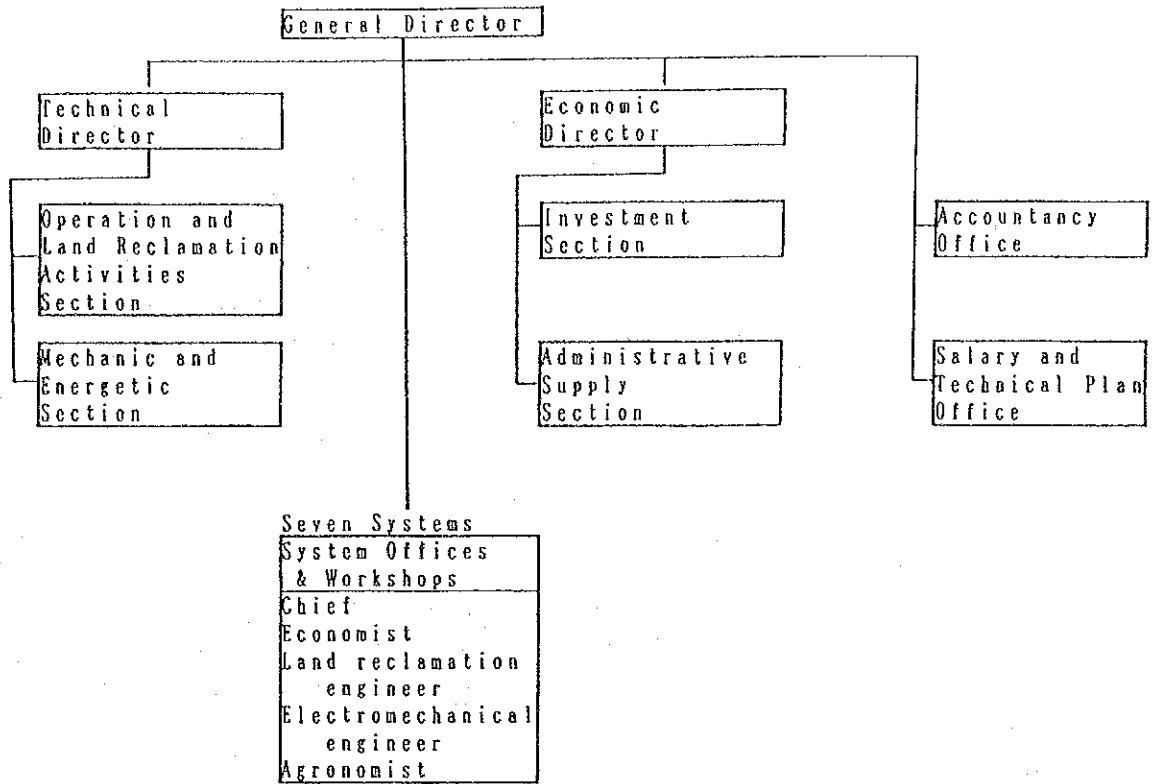


Figure Organization Chart of SCALIF 'GIURGIU'